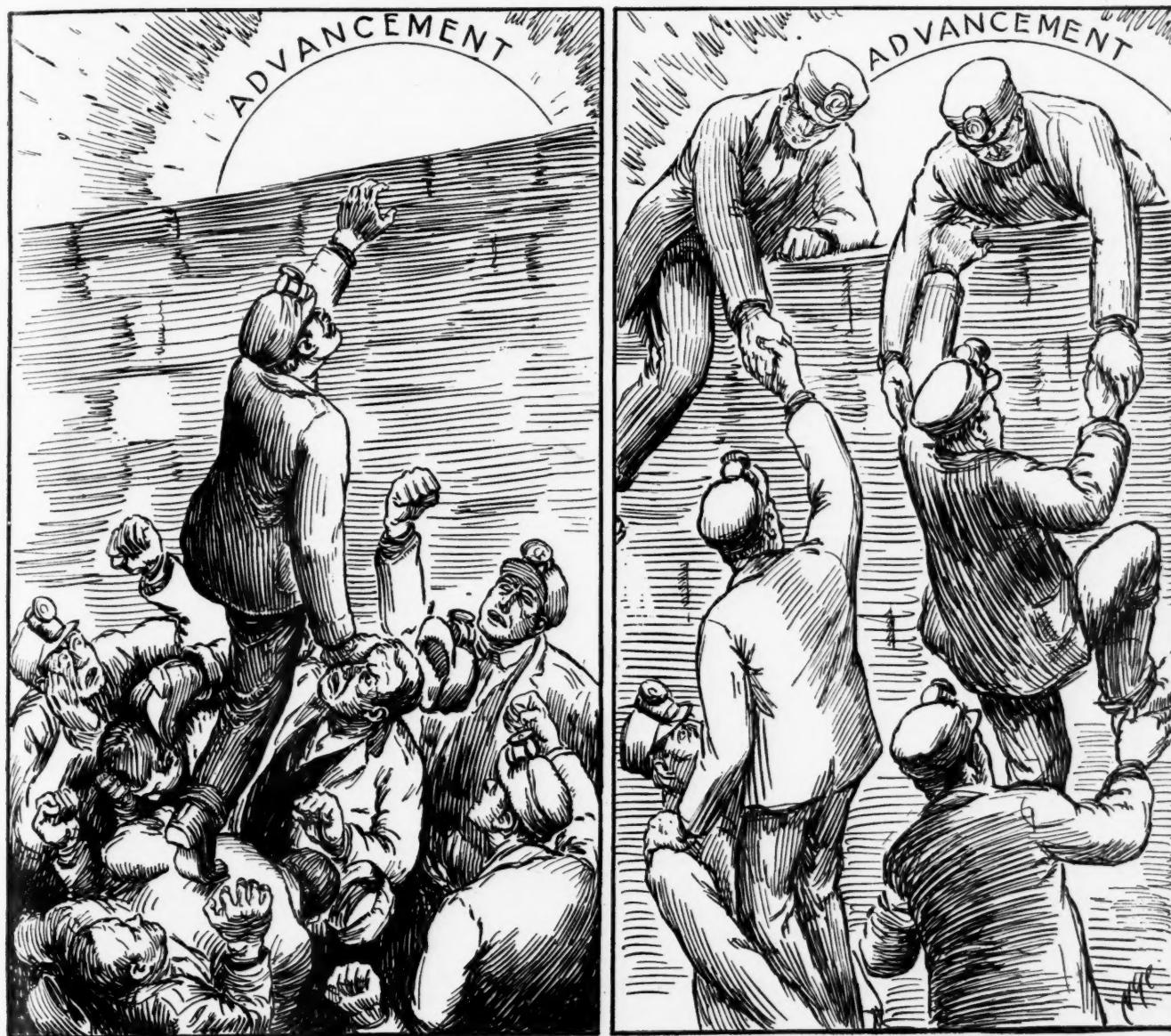


COAL AGE

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TWO WAYS OF GETTING THERE

In the picture to the left we see a man despotically attempting to reach the top of the Wall of Advancement by clambering roughshod over the necks and shoulders of his brothers. He is trying to mount to success by trampling on the rights, the feelings, the very souls of his fellow-workers. Is true achievement to be gained in this way?

Contrast this with the picture on the right. Here we have the spirit of co-operation—the one-for-all feeling—exemplified in all its power of harmonious accomplishment. No man is here a stepping-stone for the selfish, personal gratification of another, but all are lending a hand; all are boosting, all are pulling toward a higher goal.

Which of these two ways is your way?

Working Dirty Beds of Coal

BY ROWLAND GASCOYNE*

SYNOPSIS—The method to be employed in working a coal bed carrying a large percentage of impurities will depend largely on local conditions. Although the longwall method of mining is generally favored, the pillar-and-stall system with long faces may frequently be successfully adopted.

The task of working dirty beds of coal is one of the many difficulties with which a mine manager has to contend. By the term "dirty bed of coal" is meant a seam carrying one or more dirt bands. These dirt bands may be thin and numerous or few and thick. When the bands are thin and numerous to properly clean the coal is often more a question of its treatment at the surface than of dealing with the difficulty underground. When, however, the bands of dirt are thick, it may be found necessary to modify somewhat the method of mining. The

In the case of a bed of coal, say 33 in. in thickness, resting on a band of shale say 1 ft. thick, followed by a thin bed of coal, many miners would cut the thin band of coal, break down the shale first and then the coal, with the object of producing as much lump as possible. Others, on the other hand, would undercut the 33 in. of coal and be quite satisfied to work in a height of 33 in. instead of 4 ft., as in the former method. In instances like this much will depend upon the hardness of the shale, which may vary in different parts of the same mine. Nothing but actual experiment and experience can decide these details or the best method of working to pursue.

It is a good rule when working dirty beds of coal to bring down the dirt bands and coal by separate operations, if possible, so as to permit the coal to be sent out in the cleanest possible condition.

The disadvantage of working a dirty bed of coal lies principally in the expense incurred in the handling of the dirt, and this should constitute the first consideration when deciding the method of working to adopt.

TWO GENERAL METHODS

There are two leading methods of working coal—namely, longwall and pillar-and-stall—but both are capable of modification and may in fact be altered to such an extent that it is not always easy to determine where one method ends and the other begins. As a rule, in working a dirty bed of coal the longwall method would be selected, because it ought to involve the least dead-work in the shape of handling the dirt, which under this method can often be put to the useful purpose of completely stowing, or filling up, the goaf.

Where, for instance, the combined thickness of the dirt bands does not exceed the thickness of the coal to be extracted, the longwall method of working, other conditions being suitable, is probably the only one that would be tried. If the longwall method, in the case of a dirty coal bed, involved the sending out of the mine of considerable quantities of dirt, it is certain that the pillar-and-stall system could not be applied with any chance of success.

Where the thickness of the dirt bands in the measure to be worked exceeds 25 per cent. of the thickness of the bed, the number of roadways will have to be regulated so as to increase as far as possible the stowing space in which to put the waste. This may involve the employment of some method of conveying the coal along the face to the roadway, but even that would be better than sending it out of the mine. Conditions may sometimes exist, however, where it may be considered inadvisable to adopt longwall working, and in that case a modified method of pillar-and-stall may perhaps be adopted with success.

The pillar-and-stall method of working is difficult to apply to a dirty bed of coal if the dirt bands exceed 33 per cent. of the thickness of the measure to be worked; but much will depend on the thickness of the seam, since in a thin bed the waste caused by the construction of roadways will also have to be dealt with. Should the underground conditions, however, make it inevitable that

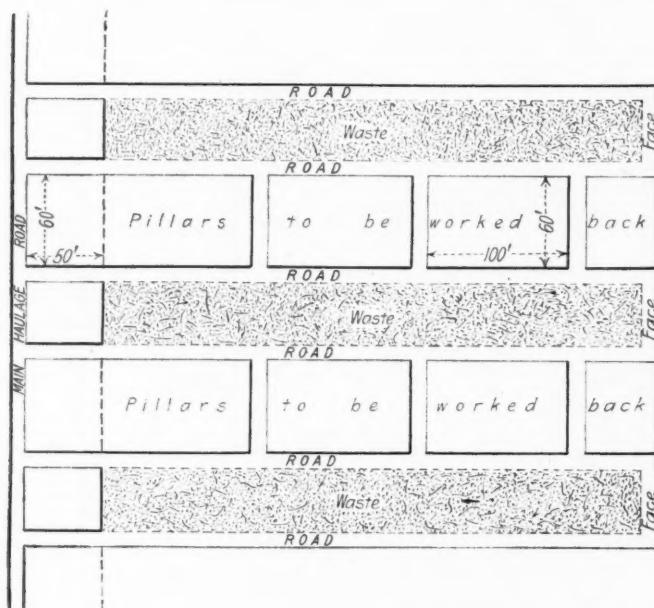


FIG. 1. ONE METHOD OF WORKING DIRTY COAL

difficulties of mining are much increased when the interbedded bands of dirt vary considerably in thickness.

If the coal is mined by hand exclusively, it is generally the custom to mine in the softest part of the seam, whether such soft part is composed of dirt or of coal. In a dirty bed of coal many would insist on the mining being done in the dirt band and never in the coal.

Most miners contend that the cutting should always be done as near the bottom of the bed as possible, maintaining that this method requires less explosives and produces more lump. Much, however, depends upon the structure of the coal. Some coals left as benches can easily be lifted with a wedge, while others, under exactly the same treatment, will produce nothing but small coal. On the other hand, many miners prefer to do the mining at the top of the seam if a dirt band or coal of inferior quality exists there. They then proceed to wedge or blast up the coal, according to conditions.

*Box 3257, Johannesburg, South Africa.

the underlying principles of either longwall or pillar-and-stall must be adopted, then perhaps a solution of the difficulty may be found in applying a modification of one of these methods, to suit the conditions.

There are several modifications of these two systems of working that may be adopted. In the case of a modification of pillar-and-stall being required, that of double-stall working may perhaps answer the purpose. This, as the name implies, means the doubling in width of the stall, to a width of say 60 ft. Should it, however, be deemed necessary, the width of the stall can be increased to the extent required.

Of course, where the mines are of moderate depth, the width of the pillars will depend on the depth of the mine, and in any case they should be sufficiently wide to withstand the pressure of the superincumbent strata, in addition to that over the stalls. This width must also be such as to make their extraction practicable, provided such extraction is desired, either by splitting or otherwise. This method of operation is usually adopted in the working of dirty beds of coal where grave objections exist to the adoption of longwall working.

The usual method is to increase the width of the stalls the desired extent and to leave a pillar of coal on either side the same width as the stall, also to lay the road along the side of the pillar, so that it may be available when the pillars are worked out on the retiring system (see Fig. 1). The middle of the stall is packed with waste, leaving only sufficient room on either side for the roadways.

WIDE ROOMS ARE ADVANTAGEOUS

If the stall is made say 60 ft. in width, it means that a waste pack about 48 ft. wide can be built in the middle of the room. This increase in width ought to provide space for the stowing of the dirt in the same proportion as the width of the stall is increased. The pillars of coal are generally worked out on the retreating system whenever this is considered advisable. The stalls may be increased beyond the width of 60 ft. should such a course be considered necessary, but in that case some means of conveying the coal along the face to the roadway will have to be adopted.

By increasing the width of the stalls and the amount of coal extracted at the first operation, the work will gradually develop into longwall; and in dealing with dirty beds most managers will agree that, when other conditions are suitable, the longwall method is the best to apply. It may be mentioned that some time ago an inquiry was made through the columns of *Coal Age* as to the best method of working a coal bed with a band of shale in the middle 27 in. in thickness. Out of five recommendations no less than four suggested longwall, the fifth advocating pillar-and-stall, evidently because the writer of the recommendation understood that pillar-and-stall was generally worked in that district.

The difficulties to be encountered in working dirty beds of coal have much in common with those met with in working thin beds, and to surmount them similar steps will have to be taken. That system of working which involves sending to the surface the minimum amount of waste and dirt will generally be the one to adopt, but there are so many other circumstances, both artificial and natural, to take into consideration when deciding on a method of operation, that each individual case should be dealt with on its own merits.

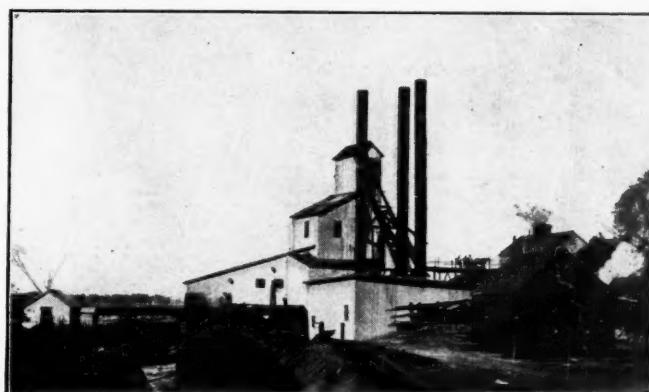
Room-and-Pillar Coal Mine in Missouri

BY HARRY MILLS*

The Waverly Coal Co.'s Buckhorn mine is located on the River Division of the Missouri Pacific R.R. on the south bank of the Missouri River and about 68 miles east of Kansas City, Mo. This mine is the only room-and-pillar operation in Lafayette County, all others working on the longwall system.

The bed of coal at Buckhorn mine averages about 4 ft., and is credited with being the best steam coal in the state. The mine has been worked with indifferent success for more than 70 years on the solid shooting basis, with mule haulage and a poor system of coal preparation. It did not work steadily, and finally was shut down for over 18 months.

In 1913-14, the mine and a large area of coal land was taken over by the new Waverly Coal Co., composed of



HEADWORKS OF WAVERLY COAL CO.

English capitalists, with F. W. Lukins as general manager. Under Mr. Lukin's management the mine was remodeled and put on a modern basis.

The first thing done was to restore the ventilation and put the haulage roads in working order. This was accomplished by cleaning and retimbering the main entries and taking up the 12-lb. rails used by the old company for its heaviest track.

This was replaced by 30-lb. steel on the main entry and 20-lb. steel on the cross-entries, together with 16-lb. rails for the rooms. Factory switches from the Cincinnati Frog and Switch Co. were adopted, and the mine placed in operation on the panel system.

Main entries are driven 9 ft. wide south and west. Cross-entries are driven east and west with room entries north and south every 350 ft. Rooms are driven 24 ft. wide and 165 ft. deep, track in center of room. All mining is done by six Goodman shortwall machines, which undercut the coal to a depth of 4½ feet.

The coal is shot down with black powder, shotfirers being employed. The machines are successful, notwithstanding that the cutting is quite hard. Four Goodman gathering locomotives equipped with reel and crab gather the coal and deliver to two partings from which a 10-ton Goodman motor delivers the loads to the shaft bottom. Three small electric pumps gather the water from working places and discharge to the shaft sump, from which point two steam pumps of Canton Hughes and Crawford & McCrimmon make, with 4-in. suction and 3-in. dis-

*Waverly, Mo.

charge, deliver it above ground. Coal is hoisted by a Litchfield engine drawing steam from three Erie boilers.

Power is derived from one 200-kw. 275-volt Ridgeway generator. Coal is prepared over the regular shaker screen equipment. Ventilation is taken care of by a 14-ft. Crawford & McCrimmon fan.

The mine is now classed as a steady producer of Missouri steam coal with an average output of 500 tons per day, which is a record for this district. J. B. Argyle is mine superintendent and F. W. Lukins general manager of the Waverly Coal Co.

**

Bull-Ring Repair Job

An engine gave trouble by steam blowing past the piston, says W. T. Osborn in *Power*. Upon examination it was found that the bull-ring was worn

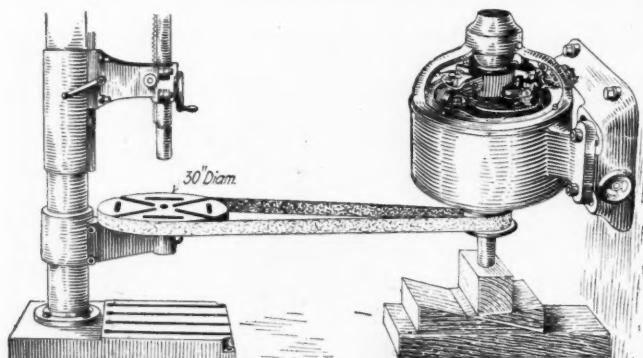


FIG. 1. EMERGENCY ARRANGEMENT OF MOTOR AND DRILL PRESS

$\frac{1}{4}$ in. To repair it in a machine shop would cost about \$300, which was considered too high. The largest lathe available had only a 12-in. swing. A friend of the engineer got around the difficulty in the following manner: A drill press with a 30-in. table was among the shop equipment. The table was removed, cleaned and graphite put in the bearing so that it would run freely. An old motor with a flange pulley was lined up with the table. The oil was drained out of the motor bearings, and it was then secured to the wall by expansion bolts. The shaft was blocked up with wood and taper wedges from

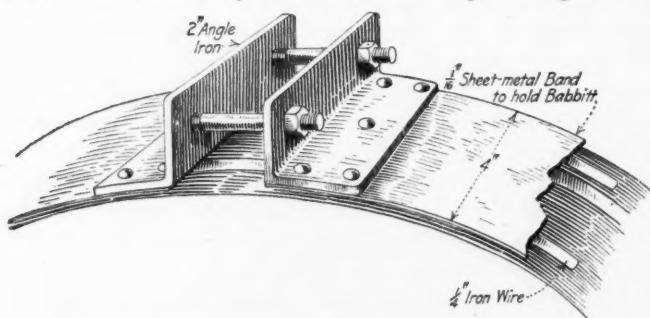


FIG. 2. SHEET-IRON BAND FOR BABBITTING BULL-RING
the floor. The motor and table were connected by a 2-in. belt, Fig. 1, and a boring bar was placed in the drill-press spindle.

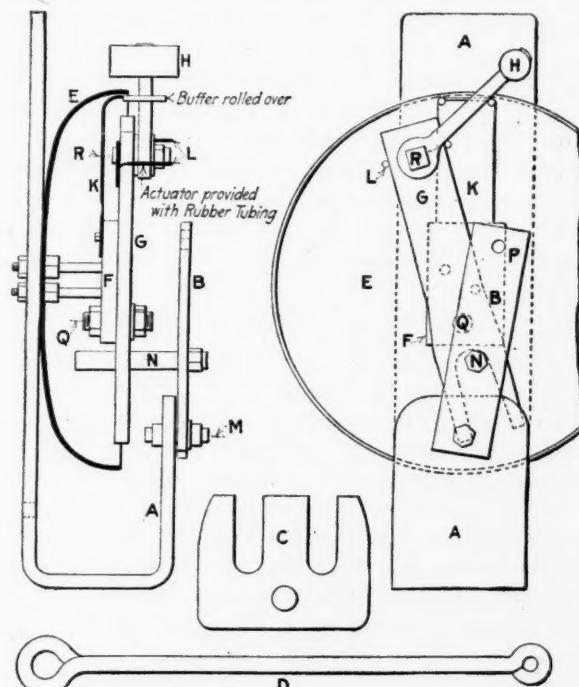
The bull-ring, which had been rebabbitted by pouring the metal inside a 4-in. wide sheet-iron band elevated by 4-in. wire, Fig. 2, was then secured to the drill-press table and, with the table revolving, was turned to the proper size. This improvised turning job has effected a saving of five tons of coal per week.

Safety Gong for Mine Locomotives

The accompanying sketches illustrate a safety gong for use on mine locomotives. The bell rings continuously and automatically so long as the locomotive is in motion. The illustration and description is from the *Engineering and Mining Journal*, the information being furnished by D. E. Charlton, of Virginia, Minn.

The device consists of a frame *A* of $\frac{3}{8}$ -in. strap iron, $3\frac{1}{2}$ in. wide, bolted on the inside of the guard at a point between the wheels and extending down the side of the locomotive. *B* is a lever of $\frac{1}{2}$ -in. strap iron fastened to the frame with a $\frac{1}{2}$ -in. bolt *M*, which acts as a pivot. The other end is tapped to $\frac{3}{8}$ in. and threaded. *N* is a $\frac{1}{2}$ -in. bolt $3\frac{1}{2}$ in. long, threaded into the lever *B*.

The crank *C* is made of $\frac{3}{8}$ -in. material, slotted as shown to permit adjustment to the length of stroke desired. This crank is bolted to the hub of the locomotive wheel on the side on which the bell is to be placed. The rod *D*



A GONG WHICH CLANGS WHEN LOCOMOTIVE RUNS

is attached to the crank, and as the crank revolves it gives the rod a reciprocating motion. As the other end of the rod is connected to the lever *B* by a pin screwed into the $\frac{3}{8}$ -in. threaded hole *P*, the lever is given a rocking reciprocating motion, which it communicates to the bolt *N*. The rod *D* is made of $\frac{3}{8}$ -in. square iron.

As the bolt *N* fits loosely in the fork of the fork-piece *G*, its steady oscillations are converted into a series of discontinuous blows, the amplitude of motion being magnified in proportion to the lengths of the lever arms *QB* and *QR*. The 10-in. gong is fastened to the frame *A*, and the bolts which hold it in place also secure the $\frac{3}{8}$ -in. plate *F*, which is used as a bearing for the fork-piece *G*. *H* is a hammer, or clanger, pivoted at *R*. *K* is a galvanized-iron buffer that prevents the hammer from resting on the gong. It is rolled over so that when struck by the hammer it acts as a spring. An actuator *L* made of No. 14 spring-steel wire stops any deadening effect to the tone that would otherwise occur. It is provided with rubber tubing at the contacts.

The Anthracite Situation

BY WILLIAM GRIFFITH*

SYNOPSIS—The article presents some basic economic facts relating to the anthracite coal industry, and advances the interesting idea that the reason for the high prices of anthracite is that the supply is diminishing.

There has recently been much discussion and investigation as to the high price of anthracite coal, and all sorts of reasons have been advanced as to the cause.

While it has been suggested that the price of coal might be more or less affected temporarily by transportation and labor conditions, or concerted action among producers, sales agents or others interested in the trade, it seems to me that these reasons are in no manner fundamental, but that the basic cause for higher prices is the present great difference between the gradually diminishing supply and the rapidly increasing demand.

The accompanying diagram shows clearly the progressive increase in the production of coal and the demand therefor, year by year, from 1850 to 1916.

It will be noticed that during the 20 years prior to 1910, the demand and consequent production of coal has been increasing at the rate of nearly two and a half million tons per year, and that at no time in the past, except the last five years, has the production varied from the demand more than four or five million tons, except in those years during which the trade has been disturbed.

It will also be noticed that the market requirements, as indicated by the demand curve in the diagram, has now reached about 93 million tons per year, whereas the production was maximum in 1910 at 82 million tons and has been declining since that date at the rate of half a million tons per year to about 79 million tons in 1916. It can thus be seen that at the end of the past year the normal market demand for anthracite coal was 14 million tons in excess of the supply; or, in other words, there is now a shortage in the supply equal to about three or four times the deficiency that has existed in any one normal year during the history of the coal trade. It would be interesting to consider whether this condition of affairs will continue.

Referring again to the statistics of the trade, we find the facts as set forth in the following tabulation:

Year	Number of Active Mines	Annual Production per Mine, Tons
1905	639	110,000
1910	731	110,000
1911	733	111,000
1912	778	*96,000
1913	769	107,000
1914	781	105,000
1915	795	100,000
1916	800	†99,000

*Suspension. †Estimated.

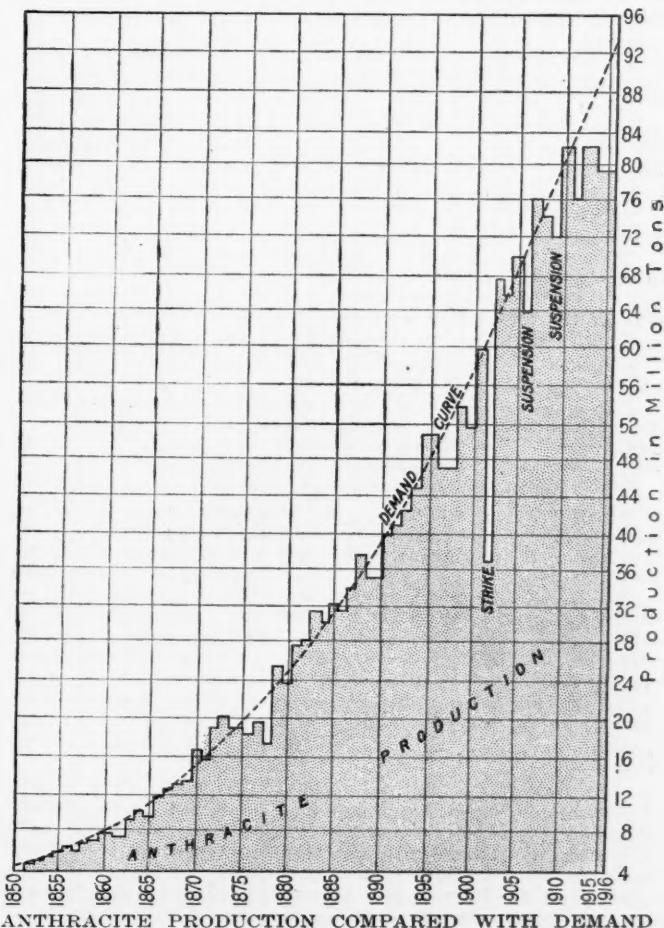
An analysis of these figures will show that in order to bring the depleted supply to a level with the increasing demand and maintain it there it will be necessary, first, to overcome the present shortage by the immediate opening and equipment to full active operation of 141 new mines; and second, if we assume that improved labor and transportation conditions would maintain the production at that level then, to meet the normal increase of demand at the same rate as during the past

*Mining engineer and geologist, Scranton, Penn.

twenty years, would require the opening of 25 additional mines per year, making a total of 166 new mines.

From the foregoing we see that to bring the output up to the probable requirements of the market at the end of the year 1917, and to maintain it equal to the normal demand, if we assume the latter will increase in the future as it has in the past, would require that at least 25 new mines be opened every year thereafter. These figures apply only to the normal conditions such as prevailed previous to 1910 and have no reference to any abnormal demand, which may result directly or indirectly from the present war.

It is, however, absolutely impossible to increase production at any such rate, particularly in view of the conditions which now exist in the anthracite field;



ANTHRACITE PRODUCTION COMPARED WITH DEMAND

namely, the unfavorable labor situation, the increasing expense of production, the rapid exhaustion of old mines and the fact that few new mines are being opened.

We therefore find that the anthracite trade is at the present moment face to face with conditions that are totally different from any that have existed during the whole life of the trade up to about five or six years ago.

I believe the statistics that have been presented furnish ample and conclusive proof that if the anthracite production has not passed its maximum, the supply will at least remain much less than the demand and that we may expect in consequence of this that the price of anthracite coal in future years will remain continuously on a higher plane than in the past.

Full Text of Trade Commission's Interim Anthracite Report

SYNOPSIS—The Federal Trade Commission says the recent wage advance will only justify an increased price of 24c. to 30c. per ton in the price of anthracite.

The Federal Trade Commission has made the report here published in full. It was signed by Joseph E. Davies, William B. Colver and John F. Fort, three of the commissioners. William J. Harris, the fourth, did not sign, being in Chicago, engaged in a bituminous coal hearing.

To the President of the Senate of the United States:

By direction of the United States Senate, as expressed in Resolution No. 217, Sixty-fourth Congress (Senator Hitchcock), the Federal Trade Commission has been engaged in an investigation of certain phases of the anthracite coal industry.

In the autumn of 1916, while that investigation was going forward a "buying panic" developed, and enormous increases in retail prices resulted. Continuing its general investigation, the Federal Trade Commission turned immediate attention to this condition. The commission, being about to make its report, finds that at this present moment the symptoms of the former unwarranted panic are recurring, and that there is now imminent a repetition of the conditions obtaining last winter.

Those conditions were intolerable, and the commission now, therefore, without waiting the transmission of its complete report on past conditions, is moved to call to the attention of the Senate the danger threatening the consumers of anthracite coal and the steps to avert that situation thus far taken, based upon the knowledge of the commission and within the limitations of its power.

During the past week, daily conferences have been held with anthracite operators, with the officials of the United Mine Workers of America, with leading jobbers, and with retailers from various parts of the country.

The commission is able to say that there now exists no good reason for a panic in the anthracite market, nor for any increase in the present selling price to consumers. On the contrary, the retail prices generally obtaining today are unwarranted.

The wage increase agreed upon on Apr. 26, 1917, will involve an increased cost of production of between 24 and 30c. a ton. The price at which leading operators have announced they will sell, will not be increased in excess of this amount. This price is upon anthracite on the cars at the mouth of the mine. There is no justification for a larger increase to be passed on to the consumer, and these mine prices will not justify the prices that retailers in many instances are now charging.

The new wage scale with the United Mine Workers is a beneficial and steady factor in the industry. The commission has received assurances, both from responsible anthracite operators and from the miners' representatives, that this will be a year of unusually large production. The mine prices announced for May reflect approximately the wage increase of last week. The commission is assured that there is no reason why this price should not continue for the season and be subject to the usual summer discounts; namely, 40c. per ton in May, 30c. in June, 20c. in July and 10c. in August.

The commission believes that the custom normally followed by the majority of retailers of passing the benefit of these discounts on to the consumer should be followed by the whole trade.

If the public is again so deceived as to indulge in a scramble for coal such as occurred last winter, the favorable situation reported above may be nullified. A demand for four months' coal in the single month of May will be most deplorable. If, on the other hand, purchases are made as usual, there will be no disturbance and small chance for speculators to fleece the public. The best thing that can happen now is for everyone to buy as has been his custom in former years. Such normal buying spreads evenly through the summer, and will insure a steady flow of the production of the mines through the channels of distribution, to build up the usual supplies in the hands of consumers, and more especially to build up the normal stock piles of wholesalers and retailers at

points far removed from the anthracite region. Many of these points must build up their winter supply during the summer when water transportation is available. Transportation will thereby be relieved of undue burdens and the coal will be steadily distributed during the summer against the needs of the winter.

During the coal panic of the winter of 1916-1917, one of the greatest factors in the distressing and intolerable condition was the unwarranted and indefensible practice of using coal cars for warehouses. Coal was held in cars by speculators while shortage of cars was alleged as a cause of fuel shortage. The commission calls your attention also to other activities of speculators in anthracite coal who perform no useful service in the distribution of the coal, but who insert themselves as a disturbing and clogging factor upon the industry and whose unearned profits are often much greater than those enjoyed by either miner or operator or honest dealer. Those profits, in many instances more than 100 per cent, were paid by the consumer, together with enormous bills for car demurrage.

Within the scope of its powers, this commission will continue to exert every influence to avert the threatened recurrence of the conditions obtaining in the winter of 1916-1917. To this end the commission proposes to secure complete current information, keeping close to the conditions of production, distribution, price at the mouth of the mine, price to jobbers, price to retailers and price paid by the public.

WILL PILLORY WHOLESALERS WHO RAISE PRICES

The commission will expose any unscrupulous wholesaler, jobber or retailer who seeks to mislead the public into a belief that exorbitant prices are justifiable or that there is any necessity to join in a frenzied bidding to secure immediate delivery for far-future needs.

The commission will compile this information at frequent intervals and will ask the co-operation of the patriotic newspapers of the country to the end that the public may be kept constantly informed of what, in justice and reason, it should be expected to pay for anthracite and as to the volume of the production and stocks on hand existing at such times.

The commission has assurances from the anthracite operators that in case of local shortages being called to their attention by the commission the operators will relieve such local stringency immediately.

The agencies which handle and distribute coal after it leaves the mine and before it comes into the hands of the consumer have also been heard to say to the commission, through numerous representatives, that they desire and will expect only a fair and reasonable profit for the useful labor and service which they perform.

The fair retail price at any place is the price at the mouth of the mine plus freight, plus the reasonable dealers' profit and cost of local delivery. The May price at the mine of ordinary white ash anthracite, allowing for the 40c. discount, is approximately as follows:

	Gross Ton (2240 Lb.)	Net Ton (2000 Lb.)
Egg	\$4.05	\$3.61
Stove	4.30	3.84
Chestnut	4.40	3.93

So then, anthracite coal consumers of the United States may feel assured, first, that there is an adequate supply of coal; second, that that supply will be taken out and prepared for use in a large and constant flow during the summer months; third, that in so far as the power of constant scrutiny and publicity are effective, the Federal Trade Commission will function; fourth, that prices at the mine will be reasonable and such as would not justify the average prices now being paid by consumers.

As to the price of coal to the consumer for the coming season, this leaves two problems for further action, either by the Congress of the United States or by some authority to be designated by Congress. First, the elimination of the element of speculation and the charging of an exorbitant price or the withholding from use of this necessity of life, and second, the imperative need of keeping the coal moving from the point of its production to its final destination and of preventing coal cars from being held out of use for the purpose of speculative storage.

The Federal Trade Commission will have the honor to present to you at an early time a further and detailed report and recommendation upon the anthracite coal industry.

Rig for Protecting Plans During Examination

Wherever there is occasion to work with a number of large and often unwieldy drawings, says J. F. Kellock Brown in a recent issue of the *Engineering and Mining Journal*, the little rig illustrated in the accompanying sketch may be found useful.

In an ordinary large table, such as the library table used in a directors' boardroom, the drawing is often damaged by being folded against the sharp edges. Cracks thus

formed in the drawing prove a weakness and sometimes lead to irreparable damage. The illustration shows a method adopted to avoid such injury. The edges of the table were first smoothed and a bar attached in the manner shown, about half an inch off, by means of brackets. The latter act as a basket to hold the portion of the drawing not in use, and the bar is attached to any side

ARRANGEMENT TO PROTECT DRAWINGS

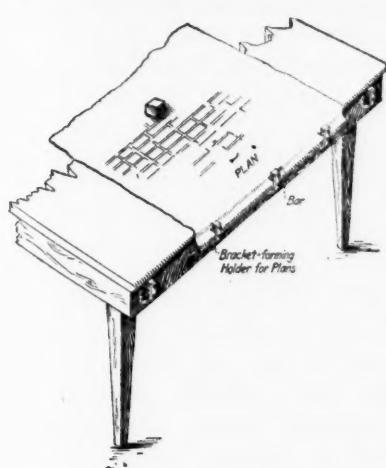
of the table where there are no drawers, and may be made the full length of the side. In using this device the drawing is unrolled to expose the parts required. The edge is then inserted through the spacing between bar and table-edge, from one end, the brackets being allowed to support the part of the drawing not required and protect it from damage. The device is equally suitable for adoption in large drawing tables, especially in the case where frequent additions to large mine plans are required.

¶

Precautions Against Hoisting-Engine House Fires

The examination of the cause of an outbreak of fire in the engine house at a Westphalian colliery, reported in *Glückauf*, traced the fire to excessive friction in a new and ill-fitting brake block. The burning splinters fell into the drum pit and ignited the shavings and greasy cleaning waste there, the flames spreading to the rope grease covering the bottom of the pit, and thence to an adjoining wooden stage and the woodwork on the drum. The winding rope burned through and the cages fell, but were arrested by the safety-catch apparatus.

Various proposals have been made to preclude the recurrence of similar dangers, including the provision of spraying devices, which, however, would entail constant supervision. Filling the drum pit with water is as little likely to be successful—in view of the low specific gravity of the grease, and the difficulty of keeping the water level constant—as covering the bottom of the drum pit with sand, which, while insuring the absorption of oil, would not prevent the accumulation of greasy waste and shavings. Another proposal was to have a communicating passage between the drum pit and the outer air, through which any outbreak of fire could be directly attacked with



ARRANGEMENT TO PROTECT DRAWINGS

extinguishers. This was also ruled out, because the door of such passage would have to be kept locked, and there would be delay in finding the key; and, unless the door joints were kept perfectly tight, the passage would form a flue tending to spread the fire.

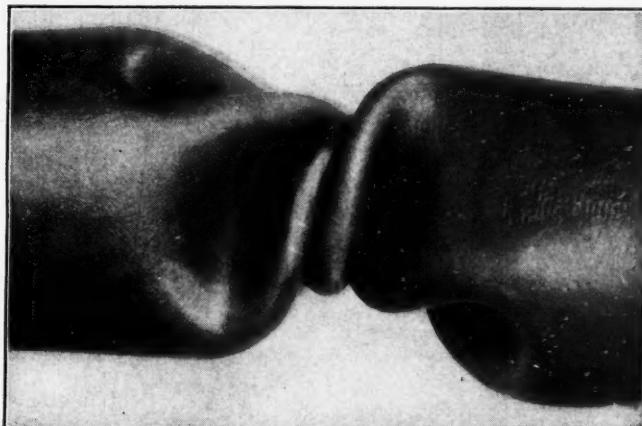
None of these methods struck at the real root of the evil, namely, the practice of leaving shavings, waste, etc., in the drum pit. The simplest and most reliable way, therefore, is to see that such dangerous materials are cleaned out of the drum pit at regular intervals, say every 8 to 10 days, under proper supervision, and to replace all woodwork in the engine house by iron. The dates of cleaning should be entered in a book, with the result of the subsequent inspection. The responsible manager should inspect the condition of the drum pit, engine-house cellar, etc., at least once every three months, and see that the appliances for fire extinction are in good order, entering his report in a book, so that the general manager can always see that the work has been carried out with the requisite care and thoroughness.

¶

Distortion Without Fracture

The accompanying illustration shows a piece of 8-in. National pipe that has been subjected to a torsional strain of 713,000 in.-lb. This pipe weighs approximately 29 lb. per foot, and the walls are about $\frac{1}{3}$ in. in thickness.

As may be seen, the pipe has been given a complete turn, the walls have been crushed together and doubled



TWISTED 8-IN. PIPE

upon themselves, yet without visible cracking or abrasion or the development of flaws of any kind. This speaks much for the toughness and malleability of the metal used in the manufacture of this pipe.

¶

Percentage of Different Anthracite Sizes

During these troublesome times, both in the family and steam trade, it is interesting to note the percentage of the various sizes mined in accordance with the figures of one of the largest companies:

Large	Per Cent.	Small	Per Cent.
Lump	0.14	Pea	13.49
Steamboat	5.24	Buckwheat No. 1	13.64
Broken	10.75	Buckwheat No. 2	12.28
Egg	14.73	Buckwheat No. 3	9.22
Stove	19.60	Buckwheat No. 4	.64
Chestnut		Boiler	.27
	50.46		49.54
			100.00

Decreasing Accidents and Increasing Efficiency

BY G. E. DOUGHERTY*

SYNOPSIS—Frequent inspections and close supervision of the work at the face result in both an increased output and greater safety. Miners may frequently be prevented from going home early through being shown how they may be enabled to finish the shift.

"When you would have a thing done, do it yourself," is wise when there is but one thing to do. The work to be done in a modern mine, however, is so varied and scattered that one man cannot give his personal attention to each and every detail. Consequently, to meet many demands simultaneously it becomes necessary to have capable and reliable men to cover the work in hand.

The difficulty with the average miner of today is that he is not always both capable and reliable; and frequently either or both traits are entirely lacking. In general practice assistant foremen are employed to see that the various parts of the work are properly started as planned and the workmen given their morning visit and instructions for the day. As a usual thing, the miner sees but one or occasionally two officials during each day, because of the extent of ground they have to cover.

This plan is not so safe, effective or profitable as it might be. Consequently, in order to meet the conditions and the many changes that have taken place affecting the economic operation of coal mines, as well as in response to a nation-wide call for some method or system that will eliminate the "extra hazard" in mining and decrease the extra toll in fatalities that we must suffer each year, it becomes the duty of every mining man to give some thought to this movement.

In view of these circumstances I propose a change in the present system of the daily inspection or examination by mine officials of all places, especially where men are employed.

A more rigid and frequent inspection should be made by each assistant, whose section should be limited in extent, so that he may be able to make from three to five visits each day to places where men are at work, the lesser number for hazardous places while the greater is for extra-hazardous pillar work or places being made safe by the workmen. This will be in parallel to the system followed by other public works, where some one is continually in charge to supervise.

In mining, if extra thought is given to the concentration of workmen in the planning of an output, one assistant can effectively oversee a section producing a large tonnage. Under certain conditions it would be advantageous for the assistants to examine their sections before the men enter the mine. This would eliminate the present system of the "fireboss run," which, to be candid, often is a run and sometimes an endurance test, especially in low coal. Results obtained may not be reliable, for we cannot expect much efficiency when a man is fagged out physically.

This plan should begin immediately and continue while educational work is being diligently prosecuted. It may

be aided by such stimulants as first aid, night schools, premiums, etc., all tending toward a better condition at home and at work. This is surely a step in the right direction, forming as it does a proper foundation on which the young mind is to grow. In time it will produce the desired right-living and right-thinking man. To the miner who dissipates, who is seldom reached and who forms more than half of the labor of today can be attributed a vast number of the accidents that occur through carelessness, forgetfulness, neglect, lack of concentration, lack of zealously, tardiness, etc. The man who enters the mine after eight hours of invigorating sleep is seldom the victim of an accident. Incidentally, this man is the strongest link in the chain tending to lower the fatality rate in mining.

THE AVERAGE INDIVIDUAL IS A CARELESS MORTAL

The miner who is his own worst enemy is with us, and a fixture for his day at least. We can about as readily eliminate him under the present shortage of labor as we can convert him into the most desirable miner in one season.

It is well known that many accidents are attributed directly to certain man-failures, that the average individual is a careless mortal when it comes to looking after his own welfare, that we have not reached the point of perfection where every man is his brother's keeper, that a human weakness is shown in almost every accident report, that a miner's safety and efficiency when left to his own judgment and discretion are poorly directed, that he frequently fails to obey or misunderstands an order and will often violate a mining law and risk his life if it will lessen his physical effort.

In view of these facts, why not meet the conditions squarely, effectively and promptly by establishing an accident prevention and efficiency measure in the form of a system of frequent inspection by a wide-awake, well-paid (the only kind that is ordinarily worth considering) section foreman? This is a sure way to secure a material decrease in mining accidents.

Will frequent inspection and strict discipline be opposed by an individual or organization? Will it pay?

Miners have respect for the foreman who is a disciplinarian; and if they quit, they will be back in a week or two to work for the man who would not permit them to indirectly commit suicide. Economically, the extra cost of inspection will pay as surely as there is a profit in stopping a leak, preventing an excess, shortening an operation or putting a stop to the loss or waste of valuable material and supplies. Much may be accomplished through the prevention of hit-or-miss methods, in attention to machinery and its effective operation, and by holding the output to greatest capacity by preventing men from going home for such causes as: No road, no curve, no parting, no wire, cable too short, no pipe, no cut, fall of slate, misfire, too much water, no buddy or an undesirable one; drivers, cutters, drillers and shotmen playing favorites; got horseback, roll, clay vein; need brattice boards or cloth; door broken, stopping damaged, no air, too much blackdamp, found firedamp, etc. These are a

*Assistant mine foreman, South Brownsville, Penn.

few of the adversities a miner meets, any one of which may prove sufficient to start him home unless some one is near to advise and direct him where and how he can complete his shift.

This condition warrants the suggestion that there is the need of close attention and prompt action in supplying a miner's wants. Idleness usually means dissipation, one day of which frequently means two and a decrease in tonnage accordingly. Close attention will often increase the general efficiency of a section as much as two or three cars a week per man and frequently one car a day. This means a decrease in cost of one or more cents on each car dumped.

A like saving would be shown on two other items of expense. These are among the biggest encountered in the operation of a mine, and upon how wisely both are handled depends the success of the operation. They are the cost of labor and the cost of supplies and material. A saving in one and the greatest efficiency in the other will be best realized by close personal contact with miners during their working hours.

It should not be forgotten that the object of frequent inspections is principally to decrease the number of fatal and non-fatal accidents in mining. He who adopts it will, however, have the satisfaction of knowing that he has done his best in the cause of safety.

* * *

Initial Announcement of the "Fuel Board"

TO THE COAL OPERATORS OF THE UNITED STATES:

Under the act of Congress, approved Aug. 20, 1916, providing that a Council of National Defense be established "for the coöperation of the industries and resources for the national security and welfare, to consist of the Secretary of War, the Secretary of the Navy, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce and the Secretary of Labor," authority is given to the council to organize subordinate bodies for its assistance and coöperation.

Pursuant to this authority the Council of National Defense has appointed Francis S. Peabody chairman of, and with authority to appoint, a Committee on Coal Production, representative of the coal-producing districts throughout the United States. It is the intention that the members of this committee shall act as chairmen of subcommittees to be appointed by them in their respective districts.

The committee convened in Washington on May 9, at which time, in addition to the members of the committee, there were present Secretary of the Interior Franklin K. Lane, W. S. Gifford, Director of the Council of National Defense, and Bernard M. Baruch, Chairman of the Committee on Raw Materials, Minerals and Metals of the Advisory Board of the Council of National Defense, from whom an outline of the proposed scope of the committee's work was received.

In approving the appointment of this committee and laying before it the work that it was expected to do, Secretary Lane referred to the coöperative spirit already shown by the business men of the country in this mobilization of the resources of the United States. "It would surprise the nations of Europe to know how intense is the spirit of loyalty on the part of our business men and capitalists. . . . You are at the very root and foundation of the great industry—the war industry—that presents itself on the other side of the water. . . . Now, there are two ways of dealing with a problem of this kind. One way is by the hearty coöperation of the men already engaged in the industry. The other way is by compulsion. My experience in the Interstate Commerce Commission led me to believe that the larger men in the railroad industry had quite as much vision as I had, and if I could show them the importance of an occasion they would try to meet it. So, instead of resorting to compulsion, instead of taking over mines and great operating plants, we are endeavoring to put you men at your best. This war is a challenge to us."

The country at the present time, in the matter of its fuel production, is confronted with a great emergency.

Notwithstanding the increased production of coal from practically every district, the increasing requirements to meet the needs of all classes of industry, as well as for the comfort and welfare of the people and the transportation of troops, munitions, food and other products, together with the supplying of our allies and for our national protection—all these demands are liable to surpass the capacity of our mines unless the full coöperation of the mining, transporting and distributing agents of this country is secured. This emergency requires not only the development of the highest efficiency, especially on account of a diminished supply of labor used in the production of coal, but also in more comprehensive methods of coöperation by the coal producers with the transporting and distributing agencies, so that not only a full production will be secured, but also that this production finds its way over our railroads into those centers where the most urgent need exists. If the demand for this product continues to increase, it may be necessary that active steps be taken to so far as possible confine the distribution and use of it to those activities which are more nearly vital to the welfare and protection of the nation. That this may not effect an unnecessary hardship upon the domestic welfare of our people it is necessary to promote the closest coöperation, and because of the duty laid upon us to promote this welfare we urge upon you that you coöperate with this committee in its efforts to promote the largest production, the most equitable distribution and the highest use to produce the best economic results. No doubt an emergency exists, but it is the belief of this committee that with your hearty support and the assistance of the public in conserving supply, sufficient fuel can be had to meet public necessity.

We believe that the first essential toward an increased production of coal is a close coöperation between mine employer and mine employee, and inasmuch as the United Mine Workers of America and the mine operators in several districts have already pledged by joint resolutions to the Council of National Defense, under whom this committee works, and have nominated committees, the services of which have been offered to the Council of National Defense to this end, we now call upon the several committees to use their best and continued efforts to increase, in so far as they are able, the production of coal for the public necessities by keeping the mines continuously at work, avoiding labor disputes and un-

necessary shutdowns. The operation of well-established mines should not be impeded, and we suggest and urge that the practice of moving miners from the mines of well-established producing companies or communities to other districts be discouraged, as this practice creates a state of unrest and tends to decrease the total output of coal, interfering with the stability of the industry which is necessary for the highest efficiency. An effort should be made to instill in the mind of the individual miner and operator, as well as the organized body, the necessity of individual effort and continuous performance so far as work is offered. The miner or the company's representative who remains at work renders as patriotic service as the man at the front.

The total production of coal throughout the country has been seriously curtailed by difficulties in transportation service and unequal distribution of cars, resulting in shortage in the number of cars available for loading, as well as congestion in the avenues leading to the points of distribution. We urge upon the operators that they pledge themselves to load all cars obtainable in the shortest time after the same become available, and that they further take up and urge their customers to release these cars at the earliest possible date after delivery so as to make them available for further use without unnecessary delay, and that all practices such as unnecessary holding of cars for reconsignment or other purposes be discontinued except when absolutely necessary for the public welfare.

Transportation interests of this country have, at the suggestion of the Council of National Defense, formed a committee appointed by the council, whose duty it is to coordinate and promote the efficiency of our railroads, and by agreement with the heads of the various railroad companies of this country the general policy of their operation has been delegated into their hands. It is the purpose of the Committee on Coal Production to work in the closest harmony with the Committee on Transportation and Communication. We urge distributing interests, especially in the centers of large population, in so far as is possible to deliver coal to their customers along normal and ordinary lines without creating unnecessary panic. We urge in turn upon all such distributors that information be sent to this committee of conditions in such cities as may be benefited by a closer coöperation of all concerned in our effort to supply all communities with their requirements.

If it is found that in any districts surplus coal is obtainable at this time over and above the actual needs, it should be divided as equally as possible and stored in the bins of the ultimate consumer so that the normal operation of the industry so far as is possible may be continuous, which will tend to prevent the necessary hardships which result from an unequal distribution of coal.

Already the centralization in the operation of our transportation lines which has been vested in its committee has proved of the greatest benefit to the coal industry, and we believe that a like centralization secured through this committee on coal production in all such matters as are furthered by the coördination of all interests will promote a still higher efficiency and be of greater benefit to producer as well as consumer.

Secretary Lane expressed to this committee the desire of the Government that the business men of the United States feel that the burden of carrying on this war rests

in no inconsiderable part upon those who represent the genius of economic and industrial life. In meeting the present emergency you can build for the future betterment of the industry by stabilizing it along sound economic lines. Hearty coöperation between mine worker and operator, and between producer and consumer expresses the best type of patriotism. The coöperation of the representatives of the Eastern semi-bituminous coal districts in agreeing to furnish the United States Navy with its next year's supply on satisfactory terms presents an example of the splendid spirit which we believe will characterize the coal industry as a whole. This is the patriotic opportunity for coördinated effort and coöperative service to the nation. Therefore, we feel sure we can rely upon your hearty support.

F. S. PEABODY,
Chairman, Committee on Coal Production.

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Proposed Pooling Arrangement To Facilitate Coal and Ore Shipments

Designed to prevent the wasteful use of ships on the Great Lakes, and to conserve railroad cars employed in carrying coal to Lake Erie ports, a plan was outlined in Washington, at the suggestion of the "Fuel Board," of pooling arrangement for shipments of coal and iron ore. The conference was participated in by coal operators, members of the Coal Production Committee and the Executive Committee of the American Railway Association of the Council of National Defense, representatives of the Lake steamship and dock interests and operating officials of Lake line railroads.

The meeting was presided over by Francis S. Peabody, chairman of the coal production committee, and Fairfax Harrison, chairman of the railroad executive committee. It was emphasized that unless all waste in iron ore and coal is eliminated, disaster will come to the iron and steel industry, upon which the success of the nation in the war depends.

COMMITTEE WILL ARRANGE SHIPMENTS

It will be the purpose of a committee named at the conference to arrange for shipments of coal to be classified according to their grades and regardless of their ownership, so they can be transported to Lake ports expeditiously and loaded into vessels at docks at once, also to quicken movements and release car equipment and vessels. The problem is to move 36,000,000 tons of coal from Pennsylvania, West Virginia, Ohio, Kentucky and Tennessee to the Upper Lake ports and to bring back 51,000,000 tons of ore. Of the latter only 36,000,000 tons will have to be moved from the Lake front furnaces that district consuming the remaining 15,000,000 tons.

Ship conservation, it was pointed out, is the essential thing to be accomplished. It was the unanimous opinion of those present at the conference that this can be done only by treating all the coal that is to be moved as being the product of one mine or of one operator. It must be moved, it was pointed out, without regard to legal title, and shipped according to its classification, as soon as it reaches the docks.

The committee to work out this pooling plan and the districts they represent are as follows: Pittsburgh—H. P. McCue, Pittsburgh Coal Co.; Mr. Robinson,

Youghiogheny & Ohio Coal Co.; Mr. Guthrie, United Coal Co. Number 8—G. D. Cameron, Pickands, Mather & Co. Cambridge—A. A. Augustus, J. W. Ellsworth & Co. Hocking—George A. Weitzel, New Pittsburgh Coal Co. Fairmont—C. H. Jenkins. Kanawha—R. S. McVeigh. Pocahontas and New River—F. G. Hartwell. Railroads—George L. Peck, fifth vice president Pennsylvania R.R. Docks—Edward Urig and William Collins.

The coal committee will attempt to have every shipper of large cargo coal enter the pooling agreement by next Tuesday.

Who's Who In Coal Mining

James Ashworth

Among the pioneers in the field of coal mining, there are few to whom the industry is more indebted for faithful and painstaking study and toil than to James Ashworth, consulting engineer and mining expert, Vancouver, B. C., Canada.

Mr. Ashworth was born at Bromley Cross, Lancashire, England, where the Ashworths are well known throughout the shire. Like many other practical mining engineers of large experience, he has overcome the difficulties due to a limited early education and, by hard work and continuous application, has risen to his present eminence in the mining world.

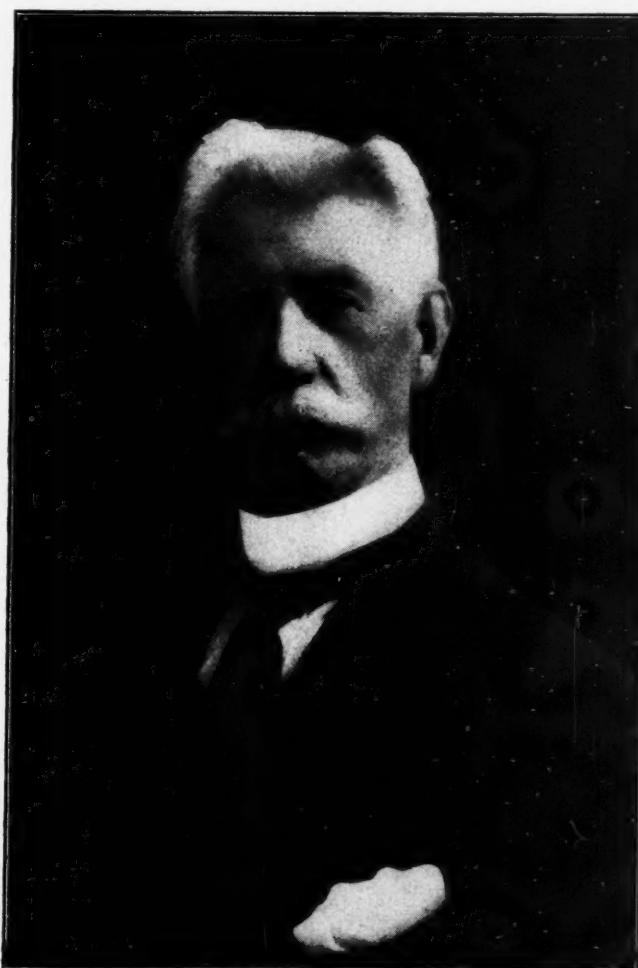
Early in the game Mr. Ashworth passed the examination and was appointed a first-class certificated colliery manager. Later he became agent and general manager of colliery operations in England. His inventive genius and clear insight into the properties and behavior of mine gases led him to investigate this important phase of coal mining. His experiments, extending over many years, have associated his name inseparably with the history of safety lamps, many features of which had their origin in his active and fertile brain.

The well known Ashworth-Hepplewhite-Gray lamp combines the best features of the original Ashworth and Gray lamps. Mr. Ashworth is the inventor and patentee of the Ashworth alcohol gas-testing lamp, which it is claimed will show the presence of but one quarter of 1 per cent. of marsh gas in the mine air. Another lamp of his design is arranged to burn both alcohol and oil, separately. The lamp widely known as the Clowes hydrogen lamp, for testing for gas in mines, also combines the Ashworth features just mentioned. In experimenting on the use of different devices for testing for gas, Mr. Ashworth developed a form of electric gas-testing appliance which found a limited application in practice. He improved the lighting power of safety lamps by different means and reached a standard of 1½ candlepower.

Mr. Ashworth has been called, from time to time, to investigate a large number of explosions in mines, among which may be mentioned the following: Talk o' the Hill, Haydock, Senghenydd, Albion, etc., in England; the Uiston explosion, in Scotland; the Fernie, Bellevue, Extension and Reserve mine explosions in Canada and the Ravensdale explosion at Washington, U. S. A. He was called to give evidence before two English royal commissions—the Explosion in Mines Commission and the Coal Dust Commission. He largely assisted the development of the Smethurst-Ashworth experimental ap-

paratus, which was taken over by the English Mines Accident Commission, besides furnishing for their use the first bonneted safety lamp of the present-day pattern. In later years Mr. Ashworth has become greatly interested in determining the degree to which the safety of gauze-protected lamps is impaired by the presence of fine coal dust floating in mine air.

During his career as a mining man, he has been part owner of the property of James Stott & Co., proprietor of the Bank Top colliery, and has served as president of the Nottinghamshire and Derbyshire Association of First-Class Colliery Managers. He is honorary treasurer



JAMES ASHWORTH

of the Vancouver Chamber of Mines. He has been connected with many mining societies and still retains his membership in the South Wales Institute of Engineers.

Mr. Ashworth has contributed many papers to technical publications and societies. The papers have treated on numerous mining subjects, such as safety lamps, testing for gas, coal dust, mine explosions and their prevention by watering, stonedusting and humidification of the mine air. His work in mining has received frequent recognition by the bestowment of prizes and medals of which he is the proud possessor.

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Control Over Mining Camps—When all the land on which a mining camp stands is owned by a coal company, the company may validly provide in leases covering houses, etc., let to tenants that control over the streets shall be reserved by the company for the purpose of police regulations, and under such reserved power the company may exclude undesirable outsiders coming to the camp to deal with employees and tenants. (Pennsylvania Supreme Court, *Harris vs. Keystone Coal and Coke Co.*, 100 Atlantic Reporter, 130.)

Power Department

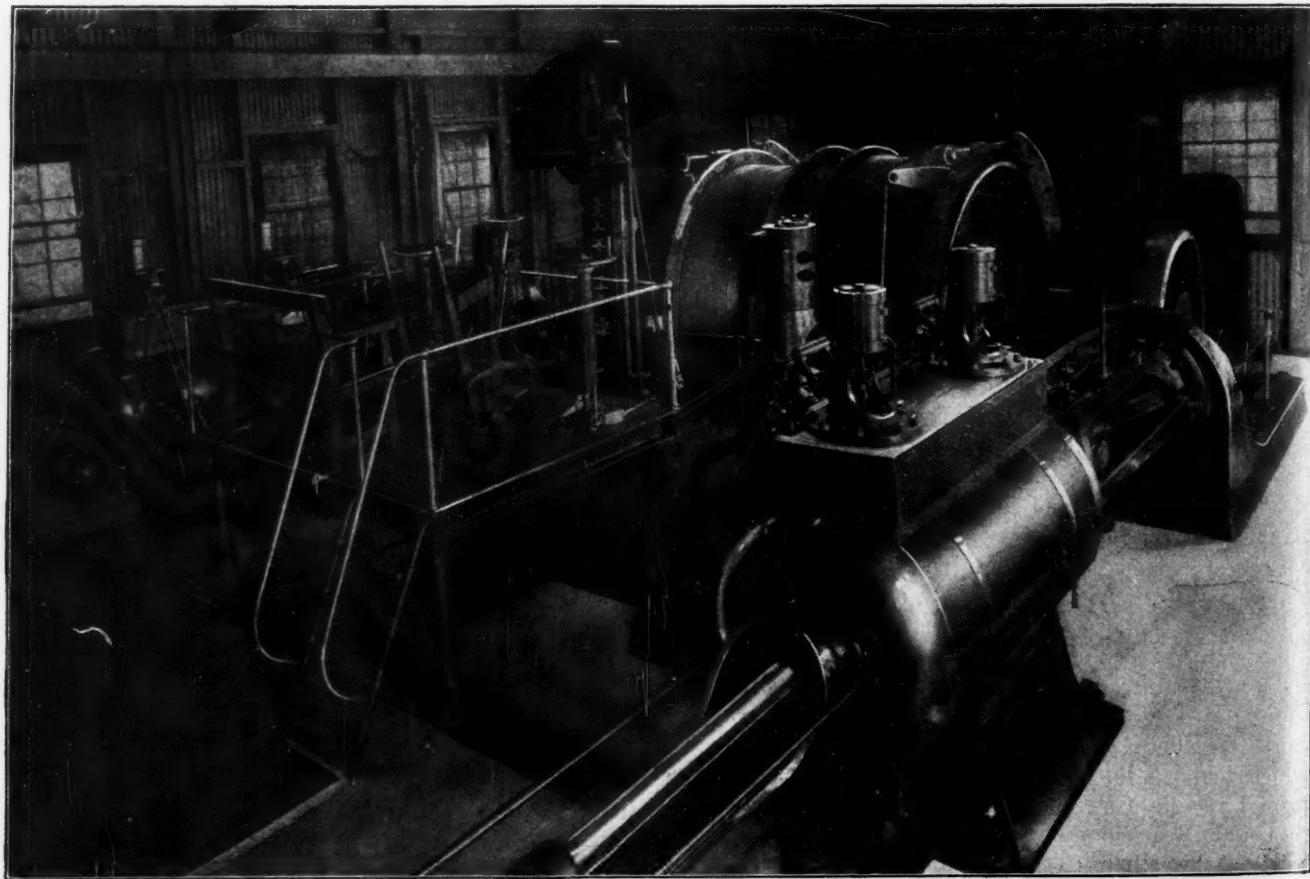
Modern Hoists in South Africa

SYNOPSIS—Careful records of costs covering the Ward Leonard and three-phase systems of electric hoists and the steam hoist, all on machines of similar capacity and operating under closely similar conditions, showed the advantage to lie with the Ward Leonard control. The steam hoist showed a decidedly greater cost than did either of the electrically driven machines.

Some time ago, a company was formed to harness the Victoria Falls in Rhodesia, for the purpose of supplying the coal and gold mines of South Africa with electrical power. There was so much opposition raised in the Transvaal to this scheme, on account of the injury it would do to the collieries, that it was abandoned. In its

practically every purpose except that of driving rock drills. These, for obvious reasons, are driven by compressed air; but this air is produced by electrical power, so that in the end the motive power for the rock drills is obtained from the power company.

About this time there arose considerable discussion as to the superiority of electricity to steam for winding purposes and also with regard to the various systems of electric hoists proposed to be used for winding. An interesting discussion took place at the meetings of the South African Institute of Electrical Engineers, Professor Heather, then electrical engineer for the leading mining group on the Rand, championing the three-phase system of winding, while Mr. Renner, of the General Mining and Finance group, urged with much effect the superiority of the Ward Leonard system. Many mines still adhere to steam hoisting, but since that date quite a few electrical



THE STEAM HOIST AT THE AURORA WEST MINE

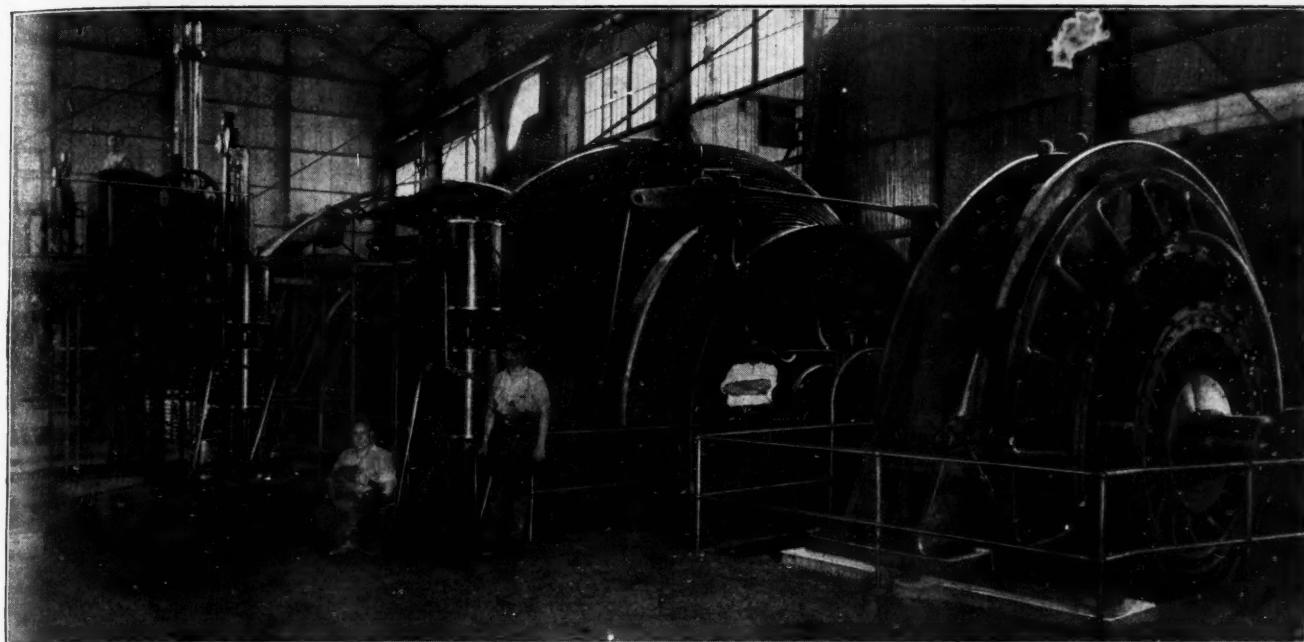
stead, a proposition was made whereby Transvaal coal was to be used for generating purposes.

To this plan the Transvaal Coal Owners' Association objected; but nevertheless the scheme was passed, with the result that events have proved the opposition of the coal owners to have been quite unfounded.

About six years ago, the Victoria Falls Power Co. started to supply the mines with electrical energy for

hoists have come into use, employing both the Ward Leonard and three-phase systems of control.

Attention has recently been redirected to the subject by the reading of a paper before the Institute of Electrical Engineers. In this paper were given the comparative results obtained with Ward Leonard, three-phase and steam methods of winding. The instances selected for comparison were the Ward Leonard at the Meyer and



THE THREE-PHASE SYSTEM OF CONTROL APPLIED TO A MINE HOIST

Charlton, the three-phase at the Van Ryn and a modern Robey steam hoist at the Aurora West Mine. The horse-powers of the machines were 500 at the Meyer and Charlton, 550 at the Van Ryn and 800 at the Aurora West. The size of the drums was 10 ft. by 3 ft. 6 in. for both the electric hoists, while for the steam hoist it was 9 ft. by 3 ft. 3 in. All were incline shafts with similar gradients, ropes and skips. The maximum vertical depths of wind were: Meyer and Charlton, 2060 ft.; Van Ryn, 1583 ft., and at the Aurora West, 1323 feet.

Careful records of the work done and stores consumed were made at each of the mines for the months of April, May and June, 1916, with the following results: The average shaft-horsepower-hours for the Ward Leonard machine was 25,436; for the three-phase 26,124 and for the steam hoist 20,425. The average cost of attendance, oil and engine-room stores of all descriptions was 0.158d. (about 0.316c.) for the Ward Leonard, 0.161d. (0.322c.) for the three-phase and 0.176d. (0.352c.) for the steam hoist.



WARD LEONARD SYSTEM OF CONTROL APPLIED TO A MINE HOIST

In the matter of repairs, during the three months, the Ward Leonard cost, for wages, materials used and stores consumed, 0.097d. (0.194c.) per shaft-horsepower-hour, the three-phase system 0.292d. (0.584c.) and the steam hoist only 0.035d. (0.07c.). Furthermore, with respect to the cost of power, it must be remembered that the two electric hoists obtained energy from the Victoria Falls Power Co. at the same price of 0.525d. (1.05c.) per kw.-hr. The result was that for the Ward Leonard system the cost in power was 0.893d. (1.786c.) per shaft-horsepower-hour and for the three-phase system 1.038d. (2.076c.). The power cost for the steam hoist was much higher, amounting to 1.746d. (3.492c.) per shaft-horsepower-hour.

By adding together all these different items it was found that the total average cost per shaft-horsepower for the Ward Leonard system was 1.148d. (2.296c.), while the three-phase system cost on the average 1.491d. (2.982c.). On the other hand, the steam hoist cost much more than either of the electric machines, as it averaged 1.957d. (3.914c.) per horsepower-hour.

It may be explained that drivers' wages are not charged to any of the hoists as this item is charged in the cost sheets under the heading of haulage. The item of attendance and engine-room stores, however, includes all other engine-room wages and supplies. With regard to the item of repairs, this includes in every instance all mechanical inspection, supervision and actual repairs. Power, of course, includes the cost of electrical current from the power company, as also the cost of air used for braking purposes. For the steam hoist, power covers the

The costs were worked out so as to afford a reliable basis for comparison. It may be noted that the three-phase system is rather heavy on repairs, while the steam hoist being practically new repairs seem light.

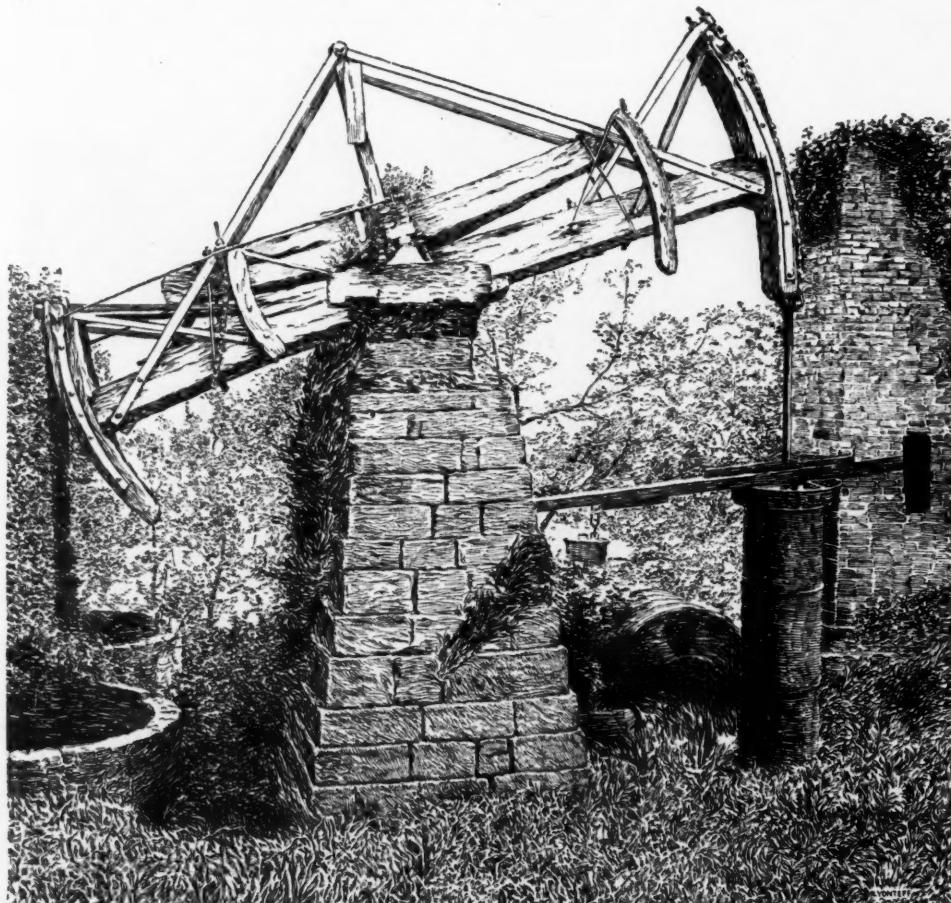
The conclusions arrived at on the Rand by the majority of engineers, with regard to the three different systems of winding after an experience of five years, are that in electric hoisting the Ward Leonard system is the most efficient and cheapest in power and maintenance, while it is by far the easiest to operate, and that the three-phase system is much cheaper in first cost or capital outlay, but more expensive than the Ward Leonard in power and maintenance. Where purchased power is used, many of the drawbacks of the three-phase system are not experienced, with regard especially to the high peaks. The three-phase system, furthermore, is not so easy to control and requires careful handling when lowering or raising men. If circumstances admit of the application of a balance rope under the skips, or cages, then the three-phase system is much easier to handle.

With regard to the steam hoist, this is always safe and easy to control, but the working costs are generally higher than those of electric hoists.

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Atmospheric Engine at Ashton-under-Lyne

The illustration is from a photograph supplied by Maurice Lees, Park Bridge, Ashton-under-Lyne, and published in *The Engineer* of London. It represents another interesting old engineering relic which is still to be seen at Fairbottom, near Ashton-under-Lyne, although its active career terminated nearly 100 years ago. It is one of the old Newcomen pumping engines, which found extensive application for pumping operations at collieries. It has often been illustrated. The steam side of the engine comprises a cylinder 26 or 28 in. in diameter, with a stroke of 6 ft. The beam, as will be seen, is of wood braced with iron and has segmental ends to which the piston rod and pumps are attached by chains. It was formerly used for pumping water from the Cannel mine, 70 or 80 yards deep, in which it was assisted by a water-wheel, since removed. The steam was generated in a wagon boiler, now standing alongside, and the coal was brought from a pit some distance away. It is reported that the piston was kept



OLD NEWCOMEN PUMPING ENGINE

cost of fuel, water and wages, and every other cost incurred up to the delivery of the steam to the cylinders.

steam-tight by pouring on top of it a solution of horse manure and water.

The Labor Situation

General Labor Review

The anthracite region is working steadily with, however, a strike in the Northern and another in the Western Middle Basin. Adjustments have been made in the wages of rock contractors and in the contracts of the stripping firms, in accord with the new wage contract with the "Anthracite Mine Workers Organization." Seeking ways of increasing output, operators have imported Mexicans into the Northern field, and appeals have been made to the miners to work steadily, taking no holidays for picnics or religious festivities other than those required by the Church.

In central Pennsylvania an arrangement is promised of the car-pushing difficulty and of the brushing question, and the men are asked by the Department of Labor, the international executive board, the international representative in the Federation of Labor, and their district officials to remain at work till the negotiations are completed. Meantime the price of coal to the public is to be lowered considerably. So long as the regulation is within reason there is no cause to object to this provision. The coal companies themselves will doubtless undertake to do what the officials of the state are not at present empowered to demand of them.

Stineman Incident Exaggerated

The importance of the Stineman Coal Mining Co. incident referred to in a separate article in this issue seems to have been grossly exaggerated. The Federal Government is acting apparently only in an advisory way, the railroads offering preferential service in return for a fair selling rate granted to the munitions factory, and the influence of the Department of Labor being used to keep the mine workers from striking.

Labor conditions in Somerset County improved somewhat during the week ending May 12. The men seem satisfied and well pleased with the advance in wages granted on May 1. The Maple Ridge Coal Co., at Holsopple, continues operation as a nonunion mine, the working force steadily increasing. At Listie the Stauffer-Quemahoning Coal Co.'s men threatened to strike but forbore. Hooversville is also quiet. At the McDonaldton shaft of the Brothers Valley Coal Co., after a strike of a week to secure recognition for their union, 30 men returned to work on Thursday, May 10. The number is increasing. Some of the small operations that were on strike on the Berlin branch of the Baltimore & Ohio R.R. have returned to work.

A Correspondent's Version

An indignant correspondent writes under the date line of May 14 as follows:

In the issue of May 5, on page 788, you called attention to certain labor conditions in the Kiskiminetas Valley, on the Conemaugh Division of the Pennsylvania R.R. You gave a list of certain mines which have been unionized. We believe the list is practically correct. However, the assertions are very wide of the mark.

This settlement [between the Hicks' interests and the United Mine Workers] was made on Apr. 24, and instead of everything running peacefully and quietly, there has been nothing but turmoil and strife ever since; and of all the mines enumerated there are but five which are running, and none of them are producing over 35 to 40 per cent. of their normal output.

The writer is well acquainted with the situation in this locality and flatly contradicts the statement that the union has had anything to do with the advance of wages in this district, as the majority of the coal at present is nonunion and the wage rate is higher than at union mines. [No statement was made in the article referred to crediting the union with raising wages at the Hicks' mines.—Editor.] The action of representatives of the United Mine Workers has been one of threats and intimidations, and now when every effort should be bent toward efficiency and increased coal output, which is so vital to the affairs of the nation, these paid agitators are stopping at the best hotels and spending their time trying to disrupt the nonunion mines, not alone in this district but through western Pennsylvania generally.

It certainly seems to us that the time has come when the Government should take some action in matters of this kind, and that such men, many of them not even citizens of the United States, should be at least compelled to let alone those who are wanting and willing to work even if they won't work themselves.

As has been said, there are parts of the Kiskiminetas River Valley which are not unionized and where the mines are not working and have not worked with any regularity for about 14 months.

There are several mines in Indiana County still holding out for nonunion operating conditions. They have a standing offer of \$5000 to anyone who will produce 500 men for work at these mines, where the pay is said to run from \$6 to \$10 a day.

Among these operators is Wilbur P. Graff, State Senator at Harrisburg, a partner of the firm of Graff Brothers, at Blairstown, Penn. He offers \$10 for every man who is sent him and who works 30 days. He offers to pay transportation also and give rent practically free where the man has a family. Further, he undertakes to sell him food at a price 10 per cent. above bulk prices.

Ohio miners are showing their patriotism by working as steadily as the car supply will permit. Unfortunately, there are still many idle days. The Salem Mining Co., of Salem, Columbiana County, Ohio, a corporation with only a small mine, is an exception to the general rule. This company has had a strike of its loaders, 35 in number, in relation to the recent increase in wage. The difficulty has been adjusted.

In our issue of May 5 it was noted that the western Kentucky operators had granted an increase of 20 per cent., but this did not satisfy the miners, and the increase was made finally 10c. per ton on pick- and machine-mined coal, as in the central competitive district. The negotiations between the Western Kentucky Coal Operators' Association and the United Mine Workers of America, District 23, have lasted four weeks, concluding with a two-day conference at the Seelbach Hotel, Louisville, Kentucky.

The new wage scale becomes effective at once, and will continue until Mar. 31, 1918. The rate paid for machine mining in the past has been 41.03c. per ton. An increase of 20 per cent. would bring up the price 8.206c. instead of 10c., as in the central competitive district. The mine workers stood for the "flat increase," as it is termed, and eventually secured it.

The coal miners in the vicinity of Hillsboro, Taylor Springs and Schramm City, Ill., who struck last week in an effort to force the unionizing of the Schramm Glass Co.'s factory, have changed their minds and gone back to work. They found that the rest of the miners of Montgomery County were not disposed to follow their lead and join in the strike for the unionizing of an industry with which they had no relation.

As soon as the coal miners went back to work the glass-workers realized they were beaten and capitulated, accepting open-shop regulations. However, they received an increase in wages.

Agreement Reached at Kansas City

A complete agreement has been reached at Kansas City, Mo., by the committees representing 40,000 miners in Missouri, Kansas, Oklahoma and Arkansas and those representing the operators. The flat increase of 10c. per ton is granted the miners and 20 per cent. is added to the day wages. The agreement is slightly different from that recently adopted in New York for the Central Competitive Field, but, as in that agreement, no increase is granted for deadwork or yardage.

The increase becomes effective on May 1. The conference has appointed a committee of six to coöperate with the Council of National Defense in increasing coal production and in keeping the mines constantly at work in the four states.

The pith of the agreement is as follows:

Pick and machine mining shall be advanced 10c. per ton in Districts 14, 21 and 25, except at certain mines in the Arkansas field, where a material percentage of slack is left in the mines. The mining rate at such mines shall be advanced 12½c. per ton, it being understood that the question as to mines at which this advance is applicable shall be referred to the miners and operators of that district for settlement. All day men at mines or strip pits now receiving \$2.98 and \$3 per day shall receive \$3.60 per day. Monthly men and all other classes of day labor employed in and around the mines or strip pits shall be advanced 60c. per day with the exception that trappers shall receive \$1.90 per day and all boys now receiving \$1.57 per day or less shall be advanced to \$1.90 per day.

It is understood and agreed that no change shall be made in the original contract other than as provided in this agreement. These advances are to become effective May 1, 1917, and are to continue in effect until July 31, 1918 unless an advance is made on Apr. 1, 1918, in the mining rates or day-wage scale of the Central Competitive District. In that case the same advances shall be made in Districts 14, 21 and 25, to become effective Mar. 16, 1918. These shall remain in effect for the balance of present contract—that is, until July 31, 1918.

The Kansas City contract does not control the action of the greater part of Oklahoma, because the Oklahoma Coal Operators' Association at the last biennial conference seceded from the Southwestern Coal Operators' Association and now acts independently. The bulk of the mine workers and operators' representatives of Oklahoma will meet one another at McAlester, Okla., and arrange a new contract. The agreement effected will probably follow the lines of that secured in the Central Competitive and Southwestern districts.

The Canadian situation is distressing. The ballots of the mine workers were against accepting the increase in wage granted by the operators. The employees want a 25 per cent. increase, whereas the protocol only promised an advance of 15 per cent.

A suspension has been in effect since May 1, and now a general order has been promulgated in District 18 by which a strike is declared. The mine workers not only want more pay, but the removal of penalties for unwarranted strikes, an 8-hour day for all outside day labor and single-shift operation.

The jury reporting on the explosion at No. 3 mine near Fernie, B. C., less than two months ago, declared that from evidence adduced it appeared that single-shifting, if practiced, would have a material effect in preventing explosions.

The shortage of coal is acute, and as a result the smelters are likely to be laid idle. They have no stock of coal on hand, as there has been a shortage of labor for months past and an overplus of coal could not be secured.

The mines in the eastern part of Canada have hitherto been working without strikes, but recently there has been trouble brewing at the Springfield collieries in Nova Scotia. At these mines 1500 men are working. The workmen at these mines are not organized as part of the United Mine Workers of America, but as the Provincial Workmen's Association. Though the association has always been in favor of observing its contracts and of complying with the law, there was at the beginning of the present month much talk of a strike and no discussion of the workmen's obligation to submit the dispute to the conciliation board of the Government. However, the Department of Labor is taking an active interest and has sent representatives to Glace Bay.

■

Anthracite Labor Shortage

The Delaware & Hudson Co., which has suffered much from the strikes and violence of the Industrial Workers of the World, and which has in consequence lost many of its best men, has been compelled to bring in Mexicans to take the place of the mine workers it has lost. Sixty Mexican men with their wives and children have been imported into Miners' Mills, a village lying between Wilkes-Barre and Scranton.

Of course, the introduction of a new racial element will be likely to meet with some opposition, and prominent Mine Workers' leaders have stated that "if the coal companies are going to import these men without notice to the other mine workers, they can look for a shut-down of their collieries."

Further north the same Delaware & Hudson Co. has a strike on its hands, the men on strike making no complaint about the corporation. Their grievance is against members of their own body. The laborers are striking against the miners by whom they are employed. They say that their average wage ranges only between \$2 and \$2.25. The miners deny that statement. They declare that even before the recent settlement the laborers were getting 32 to 35c. per ton. The miners were receiving 95c. gross—that is, from 60 to 63c. net—but out of that net price the expenses for explosives and other materials had to be met. The miners declare that by reason of longer experience and the cost of the supplies which they furnish they are fully entitled to the larger half of the earnings of any working place.

A commendable attempt is being made by E. E. Loomis, president of the Lehigh Valley Coal Co., to induce the mine workers to cut out all holidays except those celebrated for religious reasons, and then only where such observance is regarded as "of obligation" by the Church.

The anthracite consumer is to be congratulated on the fact that strikes are not numerous, and every arrangement is being made to make them unlikely. Thus there were certain rock contractors' employees in the collieries in Dauphin, Columbia and Schuylkill Counties who were not included in the mine workers' agreement, but James Matthews, president of District No. 9, obtained from the Anthracite Conciliation Board on May 9 a special agreement giving these men a 10 per cent. increase in wage, which is to remain in effect till Mar. 31, 1920, expiring with the main contract. The agreement recently made with the other mine workers lasts only till Mar. 31, 1918, when the old unmodified contract comes auto-

matically into force unless a new one is made, as indeed is probable.

The anthracite coal companies also announced on May 9 that they would pay higher prices for stripping work, so that the contractors in turn could pay their men the advanced wage recently granted to other anthracite mine workers.

Unfortunately, there has been a strike which lasted two weeks at the Bast Colliery, Ashland, Penn., near Shenandoah. The contract miners alleged that they had a grievance and as a result came out on strike, making 1000 employees idle and cutting down the daily production of coal about 1500 tons. On May 11 the matter was left for arbitration and work resumed at full strength.

Some of the munition workers are returning to the mines alleging that the piece-work system at the munitions plants is lowering the wages of the munitions workers and that the high cost of boarding and living around the munitions plants makes work in them less attractive. The return of the mine workers is being helped materially by the recent rise in wage granted in the anthracite region.

To meet the increased cost of living the Coleraine local has decided to try co-operative buying of flour. A carload will be purchased by the local and distributed among the 300 members. It is unfortunate, in view of the need for an increase in output in the anthracite region, that the Lehigh Valley Coal Co. has felt obliged to delay the erection of a breaker at its new Buck Mountain operations, owing to the shortage of labor and the high cost of materials. The bituminous region, which has a glut of productive ability, goes on enlarging and building, while the anthracite region desists despite the growing need. There is something lacking in the economic regulation of things.

■

Central Pennsylvania Deadlock

The central Pennsylvania differences are in a state of great uncertainty, but may be settled by the time this paper goes to press. The delegates from District No. 2 of the United Mine Workers of America, meeting in Du Bois, decided on Apr. 8, after four days of deliberation, by a vote of 488 to 176, that they would reject the agreement made by their representatives at Philadelphia, Penn., with the Coal Operators' Association of Central Pennsylvania.

An ultimatum was issued to the operators warning them that there would be a strike on May 15 if the demands of the mine workers were not granted. The threat of a strike of 42,000 union men and the danger that a large number of nonunion men would cease work with them resulted in a meeting of the policy committee of the district with the executive committee of the operators' association. This took place at Clearfield.

The Department of Labor then took action and summoned the conferring parties to Washington to discuss the situation with Government officials. The operators were represented at the Washington conference by Rembrandt Peale, Ben M. Clark, Harry Boulton, E. H. Watkins, and the mine workers by John Brophy, Charles O'Neill, James Mack, S. J. Burns and U. E. Swartzentruber.

It is interesting to note that there were changes in the personnel of the mine workers' representatives from those representing them at the Philadelphia conference. Richard Gilbert, of Clearfield; William Welsh, of Nanty Glo, and F. G. Waite, of Du Bois, were dropped.

An agreement was soon reached. Just what value it will have depends on the action of the mine workers in convention, for they do not part with their authority. Their representatives are not given anything resembling power of attorney. It appears that the operators are similarly at liberty to throw over the agreement of their representatives, for they agreed to report after a meeting of the larger body, to be held at Clearfield.

The statement of Secretary John C. Forsythe, of the operators' association, showed that the matter had been attacked from a different angle. The reason for the large demands of the mine workers was not the high cost of living, for that the operating companies had proved willing to meet. They have offered more than the operators of any other section of the country. The whole trouble arises out of the high price of the product, for in this the mine workers wish to share.

The Government apparently believes that reasonable prices for coal will prove the needed corrective of the difficulty and help the nation, and in this its judgment is good. The operators, according to John C. Forsythe, have undertaken, as far as their sponsors can undertake for them, that the coal supplied to the Government shall be sold at \$2.95 per ton at the mines, that the railroads shall receive their supplies for \$2.50 per ton, and that the price to the general

public shall not exceed \$3.50 per ton. It is to be hoped that this figure will make wagoning coal to the railroad less profitable, and so cut off the great economic waste caused by this needlessly expensive way of peddling coal for wholesale purposes.

The Department of Labor issued the following statement on May 12, informing the public that it had been sent to upward of 160 local secretaries of the United Mine Workers in central Pennsylvania:

The miners of District No. 2 are hereby directed to continue at work by your committee and the Department of Labor. Your committee, along with the Department of Labor represented by Secretary Wilson, has reached an agreement on the question of car pushing and also on the question of brushing on the main lines. The details are now being worked out.

The district committee and international representatives at Washington are unanimously in favor of the proposition.

The Government approves the settlement and requests the miners of central Pennsylvania to remain at work under the proposition.

The Government, represented by Secretary Wilson, wishes to impress upon the miners of District No. 2 the necessity of that field continuing operations at this critical time.

This notice was signed by all the representatives of the mine workers of central Pennsylvania present at Washington, and by Robert H. Harlin, of the executive board, District No. 10, Seattle, Wash.; James Lord, president of the mining department of the American Federation of Labor, Washington, D. C., and William B. Wilson, Secretary of Labor, Washington, D. C.

33

No Mines Are, as Yet, Placed Under Government Control

A rumor was circulated last week that the mine of the Stineman Coal Mining Co., employing about 300 men and located at South Fork, in Cambria County, Pennsylvania, had been put under Government control.

It is reported that the company has been asked officially to put a price of \$3.50 a ton on the coal sold to E. I. du Pont de Nemours & Co., as that powder concern is engaged in the manufacture of munitions for the United States and its allies.

Washington officials on May 10 denied that any troops had been stationed at the mines and declared that no attempt had been made to force a compromise of the situation. A similar statement was received from Johnstown, a town located less than 10 miles from South Fork. The notice posted at the mine is even better evidence of the untruth of the wild rumors regarding Government control:

This mine is now being operated by special request of the United States Government, and has been called upon to produce its daily maximum capacity, estimated at 21 cars. The railroad company will deliver daily the necessary number of cars to load this tonnage for Government purposes. In a true spirit of patriotism we have responded to the call of the country at this time and we now request all employees of this company who sincerely wish to the best of their ability as true and loyal citizens to serve the Government to discharge their full duty faithfully by reporting daily for work, loading with care and diligence the greatest number of cars possible and observing the rules and regulations established for the operation of this mine.

33

Southern Wyoming Writes a New Wage Contract

On May 17 the United Mine Workers of America, District No. 22, secured by negotiation a new wage contract with the South Wyoming Coal Operators, including the Union Pacific Coal Co., the Superior Coal Co., the Kemmerer Coal Co., the Gunn Quacal Coal Co. and the Diamond Coal and Coke Co. The agreement will remain in force till Aug. 31, 1918.

The increases for contract labor are as follows:

	Cents Per Ton
Machine mining.....	7
Pick mining, where now paid 56c. per ton or less.....	6
Pick mining, where now paid 57c. to 67c. per ton.....	7
Pick mining, where now paid 68c. per ton and over.....	8

The machine runners and helpers will receive 1½c. more a ton.

Engineers will work the requisite number of hours to perform their work and will be paid accordingly, based on a wage of \$120 per month and an 8-hour work day. Their hours shall not, however, exceed ten per day.

The day wages outside will be as follows: Firemen, \$3.52; head blacksmith (in charge of one or more blacksmiths), \$4.40; other blacksmiths, \$4; blacksmith's helpers, \$3.28; car repairers, \$3.36; machinists, \$4.16; carpenters, \$4.10; machinists' helpers, \$3.44; teamsters, \$3.28; box-car shoveler, \$3.60;

electricians (in and around mines), \$4.16; boiler makers, \$4.48; masons and bricklayers (in and around mines), \$4; slate pickers (boys), \$2.48; pipemen, \$4; miners (taken from face), \$4.08; box-car loader runners, \$3.76; night watchmen (if performing work for which a scale is made), \$3; outside labor, \$3.04; greasers (boys), \$2.48; tipplers, \$3.36; power-house engineers, per month, \$100.

The scale of day wages inside is as follows: Miners (taken from the face), \$4.08; miners (working by the day), drivers, timbermen, tracklayers, machine runner, helpers, McGinty repairers and rope splicers, inside engineers, rope riders and motormen, \$4.02; shotfirers and shot inspectors, machine runners and drillers, \$4.40; greasers (boys), switch boys and boys coupling at partings, \$2.48; trappers (boys), \$2; stablemen or barnmen inside, \$3.68; pumpmen, motor brakemen, tall-end riders and unclassified inside laborers, \$3.88; gas watchmen, \$4.80.

The working conditions are unchanged. It is understood that there shall be no unnecessary shutdowns and that "the employees will give that full coöperation necessary to maintain the production of the mines to their fullest capacity."

RECENT LEGAL DECISIONS

Statutory Penalty for Transportation Delays in Arkansas—A law enacted in Arkansas in 1907 provides that when freight in carload lots or less is tendered to a railroad company for intrastate transportation, the carrier must move it at least 50 miles a day, except that a day is allowed for delay at transfer points, etc. The penalty prescribed for violation of the statute is \$5 per car per day on carload shipments and one cent per hundred pounds on smaller shipments. Held that where coal or other commodities are sold f.o.b. point of origin, the buyer becomes vested with title on the goods being placed in transit and, therefore, is the proper party to claim the statutory penalty for delay. The provision of the act for an allowance of 24 hours "at each point where transferring from one railroad to another or rehandling of freight is involved," applies to a shipment by carload lot, as well as a shipment in less quantity, at a division point, where a car is transferred from one train to another. (Arkansas Supreme Court, Chicago, Rock Island & Pacific Railway Co. vs. Consumers' Coal Co., 193 Southwestern Reporter, 93.)

When Miner Assumes Risk of Slate Falling—In reversing judgment in favor of a miner for injury sustained by him through fall of slate in a mine passage, the Kentucky court of appeals holds that the general rule of law that, where an employee complains to a superior of a dangerous condition and the latter promises to have it remedied, the employee does not assume the risk of injury pending lapse of a reasonable time in which to make the repair, does not apply to conditions so dangerous that an employee of reasonable prudence would not remain at work in face of the danger. So a miner who continued to mine coal beneath slate at a point where a roof was cracked, knowing the existing condition of the roof, assumed the risk of falling slate. (New Hughes Jellico Coal Co. vs. 191 Southwestern Reporter, 78.)

Surface Rights Under Deed—A conveyance of underlying coal with the privilege of using the surface for transportation means necessary for removal of the coal and of minerals from other lands will be interpreted as relating to removal of coal from other lands to be acquired by the grantee when reasonably necessary that the various tracts of land be mined together. The grantee is entitled to maintain a tramroad across the particular land for the purpose of hauling timber to be manufactured into lumber to be used in the mining operations, and if excess timber be sold as a mere incident to the grantee's coal operations, such excess timber may be hauled across the particular land. (West Virginia Supreme Court of Appeals, Jones vs. Island Creek Coal Co., 91 Southwestern Reporter, 391.)

Tipple as Removable Fixture—A lease of Arkansas coal-mining property provided that the lessee might remove from the premises "all machinery, pit cars, mine rails, and pipe as may have been placed therein by him." Held, in a suit brought by the lessee to recover possession of mining fixtures, etc., that the jury was warranted in finding that the tipple was a removable fixture. "Under the mining law, mining machinery, apparatus and appurtenances placed upon the property by the lessee are not regarded as fixtures that pass with the soil and lease as appurtenances, but as personal property of the lessee that may be removed by him, in the absence of express stipulation in the lease to the contrary." (Arkansas Supreme Court, J. H. Hamlin & Sons vs. Grant County, 192 Southwestern Reporter, 225.)

War Sidelights

Under this heading in Coal Age each week we hope to publish items relating to war measures as they affect the coal-mining industry. We earnestly invite all our readers to send us interesting notes covering happenings which bear on the war, either in a military or an industrial way.—Editor.

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A flag raising, with appropriate patriotic exercises, was held at the Underwood colliery, near Throop, Penn., on Thursday afternoon.

On account of the state of war now existing no certificates as mine foremen or assistant foremen will be granted to aliens in the Pottsville (Penn.) district.

Flag-raising ceremonies were conducted at the Heidelberg No. 1 colliery of the Lehigh Valley Coal Co., Pittston, Penn., on May 12. District Superintendent George P. Gallagher was the chairman of the exercises.

The Lehigh Valley Coal Co. has installed a large searchlight at its breaker near Drifton, Penn., to assist in guarding the property. Other operators, it is said, are planning to adopt a similar means of detection.

The Central West Virginia Coal Operators' Association at a recent meeting held in Fairmont, W. Va., unanimously passed resolutions urging national prohibition. Copies of the resolutions were sent to West Virginia congressmen.

Mine operators at Hazleton, Penn., have let it be known that such of their employees as make a habit of indulging in sprees following pay days will be marked as slackers and recommended to the Government as good material for military service.

On the hundreds of acres surrounding the mines of the Pursglove-Maher Coal Co., of Cleveland, Ohio, the miners are now cultivating gardens. Thomas Pursglove, of Bridgeport, a member of the firm, has charge of much of the work of cultivating the land.

Fifteen hundred persons attended the flag-raising exercises at the Butler colliery of the Hillside Coal and Iron Co., near Pittston, Penn., on May 9. Rev. S. Ezra Neikirk, of Pittston, was the speaker of the day, and Rev. Father Zimanski delivered an address in Polish.

Because picnics draw many anthracite employees from their work in a national crisis, when there is a prime necessity of maintaining the coal output, the Lehigh Valley R.R. has canceled all excursions to Harvey's Lake, Penn., the most popular picnicking resort in the region.

The Consolidation Coal Co., of Baltimore, Md., through its president J. H. Wheelwright, has subscribed \$1,000,000 to the Liberty Loan issue. Mr. Wheelwright followed this subscription by his own personal one for \$150,000.

The two together make the largest subscription from one individual or company in Baltimore.

According to the financial statement of R. B. Mellon, treasurer of the Pittsburgh chapter of the American Red Cross, contributions approximating \$2000 have been sent in previous to May 3. Voluntary contributions, exclusive of membership dues, aggregated \$30,000. Of this sum about \$2000 was contributed by miners working in the soft coal mines of western Pennsylvania.

President Jere H. Wheelwright, of the Consolidation Coal Co., Baltimore, Md., has sent out an order to his mines and to the Cumberland and Pennsylvania railroad officials, to give right-of-way to all Government or munition plant coal, and then to expedite all other coal movement to aid the general fuel shortage situation. The company will make every effort to bring a maximum tonnage to terminals for quick relief of the tight situation.

Detectives working for the coal operators and local police at Hazleton, Penn., are following clues that may lead to the arrest of persons attempting to cripple the production of anthracite in the Lehigh region. One of the large belts in the Hazleton shaft colliery of the Lehigh Valley Coal Co. was cut by unknown persons, and work had to be suspended for more than an hour. At Cranberry the water-supply for the big colliery of the Lehigh Coal and Navigation Co. was shut off and there was a delay of three hours. Recently the slope at the Lattimer mines of Pardee Brothers & Co. was set afire, but the flames were discovered by a watchman before they became serious.

The chief engineer of the Société Houillère de Liévin states, in an interview published in the daily press, that the Germans after the capture of Loos endeavored to prevent any possibility of communication between the Anglo-French and the German lines by means of the mines. The Germans held five out of the company's six pits, but No. 5, the Fosse de Calonne, was in possession of the Allies. The Germans therefore sought to damage the tubbing and flooded the pits, which are 2000 ft. deep. It is known that the mines are flooded, but not known whether the tubbings are destroyed. On the most favorable hypothesis, however, it will take months, perhaps a year, before the six pits are working again, the Germans having methodically destroyed all the works on the surface—machinery, boilers, etc. The work of reconstruction and repairing will be started as soon as possible, as the necessary equipment has been collected for months past.—*The Iron and Coal Trades Review*.

The men of the Short Mountain colliery of the Susquehanna Coal Co., near Wiconisco, Penn., had a flag raising on May 9 that drew many people

from surrounding towns. A feature of the celebration was the reading by Superintendent D. J. Rendell of a voluntary pledge on the part of the local miners' union to do its best to keep up maximum production during the war period. The miners also added a novel number to the occasion by sending off a salute of 21 "guns" from the top of a nearby culm bank.

The heaviest possible sentence—six months in jail—was on May 11 imposed by Judge Johnson on John Fabayan, of Oneida, Penn., a mine worker, for making remarks derogatory to the United States flag at a recent flag raising. The jury which convicted the defendant deliberated only two minutes. Fabayan's remarks were so scurrilous as to be unprintable. He has been in this country 24 years, without being naturalized, and this fact led the Court to remark that any one who had lived here that long without taking up the duties of citizenship ought to get out.

Leonard Darwin, chairman of the Professional Classes War Relief Council, London, England, has written to L. B. Stillwell, of New York City, thanking him for the relief contribution of American engineers to the families of brother engineers in England. Mr. Darwin's communication reads as follows:

"In acknowledging the receipt of the check for \$10,000. I must once again express on behalf of our council deep gratitude for the splendid generosity of your countrymen in coming to our help. England never expected war, and the professional men and women we are helping have been greatly injured by the action of Germany in forcing this conflict on us.

"In the interests of your own country, and in order to safeguard the civilization of the world, you also have been compelled to join in this terrible strife, and I am certain that, though our beneficiaries would have been deeply grateful to you in any case, yet it is far pleasanter for them to receive this succor from the hands of an ally. All of them and all of us will ever remember America's help in the hour of our need."

The main purpose of the Italian mission to the United States, half of whose members have already reached New York, is not to obtain food, nor yet to get money, Count Celleri, Italian ambassador, announced recently. The purpose of the mission is to obtain coal and the tonnage in which to ship it to Italy. Before the war the kingdom of Italy had 100,000 tons of shipping. Today it has less than 50,000 tons, due to the activities of German and Austrian submarines in the Mediterranean and elsewhere. A vigorous campaign is being conducted against the submarines, however, the ambassador said. During the last month 14 submarines have been sunk or captured in the Mediterranean by Italian warships. Up until this time Italy has depended almost entirely upon England for her coal and shipping facilities, Ambassador Celleri explained. With the growth of the submarine menace, however, England now is able only to care for her own needs. If Italy is to be saved from a coal famine, the United States must ship millions and millions of tons to her through the Mediterranean bottoms. The coal supply of Italy is now almost exhausted. The kingdom has less than enough fuel for military purposes alone.

A Move To Stop Fuel Panic

The Federal Trade Commission desires to hear from persons who know of instances of extortionate prices being asked for coal, or of dealers who are making false announcements of "coal shortage," in order to raise prices and frighten people into submitting to extortion and unwarranted advances. The commission wants names, dates and facts, and will vigorously take up and investigate and give wide publicity to those that it finds indulging in these practices. The commission authorized the following statement:

"There is absolutely no cause for any 'panic' or panic prices, and the Trade Commission is frowning upon the operator, wholesaler or retailer who does anything toward creating an abnormal condition, or who is asking abnormal prices.

"There was justification for an advance of about 30c. a ton by producers covering the wage increase. But retail prices in most cities have been so high that dealers should reduce prices instead of increasing them. Trafickers and speculators have had much to do with the prices asked. We find that in some instances coal has passed through four or six hands before it reached the consumer, and know of one instance where it passed through the hands of the same jobber twice, he buying it back for speculation.

"The buyers of coal are in part responsible, by ordering abnormal quantities and thus tending to produce a congestion of orders and delays. This has been distorted by some coal men who seek to profit thereby. For a few days everybody should stay out of the market as much as possible and restrict purchases to present necessities.

"There is no reason for consumers to pay premiums now to get coal for next winter. Let the people who want to store coal for next winter buy as usual—any time during the next four months.

"We want the consumers to coöperate with us in finding out the dealers who are attempting extortions, and we will see that investigation is made and full publicity given. There is plenty of coal for everybody, and the idea of a panic is foolish. There will be plenty of cars to move the coal in, also. The buyers should keep their heads and refuse to buy at such prices as are being asked in many instances. In New England coast cities, so far as the supply comes by independent coal barges, it must be remembered that present barge rates are high—as much as \$3 a ton from New York to Boston—though the railroad company barges charge much lower rates."

COMING MEETINGS

Canadian Retail Coal Association will hold its annual meeting at Toronto, Ont., Canada, June 14 and 15. Secretary, B. A. Caspell, Brantford, Ont., Canada.

Mine Inspectors' Institute of the United States of America will hold its tenth annual meeting July 10-13 at Indianapolis, Ind. Secretary, J. W. Paul, Bureau of Mines, Pittsburgh, Penn.

American Institute of Chemical Engineers will hold its semiannual meeting June 20-22 at Buffalo, N. Y. Secretary, J. C. Olsen, Cooper Union, New York City.

American Institute of Electrical Engineers will hold its spring meeting June 25-30 at Homestead Hotel, Hot Springs, Va. Secretary, F. L. Hutchinson, 33 West 39th St., New York.

Illinois and Wisconsin Retail Coal Dealers' Association will hold its annual convention at Danville, Ill., June 12-14. Secretary, I. L. Runyan, Chicago, Ill.

Editorials

Coöperation—Not Confiscation

The coal industry seems to be much disturbed with reference to what the Government proposes to do in the matter of regulating production, transportation and prices. We trust, therefore, that everyone will read the initial announcement of the new Fuel Board on page 867. Let it be understood that the Council of National Defense and its various committees are only advisory bodies. It requires an act of Congress to give plenary powers to any such committee.

Mr. Peabody makes it plain in his announcement that he intends to secure results by coöperative methods. He has surrounded himself with able men who have a full understanding of the problems involved in mining coal. We are sure that when the coal industry is called upon to do its part and make its share of sacrifices the mining fraternity will not be found wanting.

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Business Papers Face Ruin

The Government's proposed plan to establish a new zone rate for all second-class matter passing through the post office represents an average increase over the present rate of 300 per cent. Ever so many of the trade, technical and business papers of the country will operate at a loss and eventually be wiped out if this legislation is put into effect.

The publishers of the United States are not a cry-baby lot. They expect to be heavily taxed during the period of this war, just the same as every other business must be taxed. They do not want to be classed with the people who are attempting to avoid their share of the burdens brought on by war. However, they do not believe it is just to kill the small business papers and seriously cripple the large ones at a time when these papers are all serving as an important arm of the Federal preparatory work.

The company publishing *Coal Age* will be taxed a quarter of a million dollars annually if this proposed legislation goes through. Should any profits from the publication of its ten important journals remain after this additional revenue is paid to the post office, the Government intends to take a large part of those profits also. This is double taxation that will either ruin this company or so weaken it as to seriously decrease the effectiveness of the work accomplished by its papers. Ten industries will suffer. Hundreds of other papers owned by other companies will be hurt just as seriously, and hundreds of the nation's industries will move more slowly right now at a time when things should be speeded up.

If the country's business papers are thus taxed, the size of the periodicals will have to be curtailed. Subscription prices will have to be raised. This will mean fewer readers and less educational information for the ones who stick.

Postage based on a zone system has already been defeated in Congress because such a plan is undemocratic. It penalizes national journals in favor of local papers.

Readers in far-off districts are subjected to undue exactions. It is not based in fact on a true hypothesis, for costs of postage do not increase in proportion to the distance. Terminal charges are the big factors.

Publishers have not benefited by the present high prices, but, on the contrary, have had to pay more for paper, ink and other supplies than ever before.

What intelligent citizen would agree to placing a tax on schools. We make education not only free but compulsory. More than nine out of every ten citizens of this country do not go beyond the grammar schools, and consequently are obliged to depend upon the papers that serve their line of business for a continuation of their professional education. In these serious times it is fair to place a tax on the profits of all companies, but why a super-tax on the dissemination of intelligence?

At a rate of 1c. per lb., it can be proved that second-class matter pays its own way. Even though this rate of postage has been a benevolence, which it has not, it would have been worth-while, for there has been no factor of greater benefit to all the people and all the industries of America than the business papers of the nation, which are standards of excellence for the whole world.

Coal Age believes it has earned the friendship of the men in the coal-mining business. If it has helped any single individual, we earnestly ask that all the influence of that individual be brought to bear on those Congressmen in Washington who would raise revenue by such unequal taxation. *Go the limit in taxing our profits, but give us a chance to live.*

¶

Coal and Iron as War Necessities

No people realize more fully the importance of coal and iron in their relation to war than do the Germans. One of the most important men on the German General Staff is a mining engineer. His influence is evident from the first drive made by the German armies. Belgium, France and Poland lost immediately to the Teutons a large part of their coal areas and a great number of their mines.

Germany's main purpose in the thrust against Verdun was to secure her hold on the Briery iron-ore basin. This basin supplies France with 90 per cent. of its iron ore. The savage submarine war of the Germans is calculated to cut off the remainder of France's iron-ore supply. Until France can regain the Briery ore basin the situation in that republic is not at all secure.

European writers have, with good reason, come to term this war a "coal-and-iron war." Since this is a fact, the entry of America into the war gives to the Allies a great advantage in the matter of the two most essential raw materials. Germany has 29 per cent. of the iron ore deposits of Europe; she has 13 per cent. of the world's deposits of iron ore. In 1913 the world's output of iron ore was 160,393,000 tons. Of this total the United States produced 63,000,000; Germany, 36,000,000; France, 21,000,000; Great Britain, 16,000,000; Spain, 10,000,000;

and Sweden, 7,000,000 tons. Before the war Germany was obliged to import 14,000,000 tons of iron ore from France. If she had not come into control of the French iron ores through occupation of the Briery basin, she would not have been able to cover the enormous requirements of herself and her allies.

Of equal importance to the cause of the Teutons was their occupation of the coal mines in Belgium and Northern France. This strategic move on the part of the Germans reduced the output of coal in France from 40,000,000 tons in 1913 to 30,000,000 tons in 1914 and 20,000,000 tons in 1915. Before the war the French coal consumption averaged 60,000,000 tons per year. The normal shortage of 20,000,000 tons was made up through importation. England supplied about 13,000,000 tons; Germany, 3,500,000 tons; Belgium, 3,500,000 tons; and other countries, 300,000 tons. Since the outbreak of the war the fall in production has been accompanied by a fall in consumption to 40,000,000 tons, leaving the coal shortage as before, or 20,000,000 tons.

The rise in the price of coal in France since the war has been very great. However, the situation was saved largely by the mine operators themselves. These mine owners voluntarily restricted themselves to an increase in price of about 25 per cent. The government helped the situation materially by rendering the industry every possible kind of coöperation, at the same time encouraging increased activity and assisting in the reopening of abandoned mines.

An important French committee has reported that American coal will not be able to relieve the situation in France unless the Transatlantic freight rates should be reduced to approximately \$10 per ton. The present prohibitive freight rates on American coal are due, not only to the lack of ships, but also to the fact that it is difficult to obtain suitable return cargoes from France. It is not impossible, however, that even in the absence of bulky return cargoes American coal producers may find it profitable to ship American fuel to France and Mediterranean ports.

2

Putting the Brakes on Speculation

Considerable caution is being displayed by those shipping interests who are asking fancy prices for anthracite. There was no limit to the wholesale prices of the individual shippers. Recently the Federal Trade Commission called together the representatives of all the anthracite producing companies, both large and small, and the situation was thoroughly gone over. The members of the commission were reported as stating rather plainly that excess profits in coal must cease, and that they intended making a recommendation to Congress that the middleman should be entirely eliminated, at least for the duration of the war. A concrete case was shown to the operators wherein a single car of coal passed through the hands of five people before reaching the consumer, and a dollar a ton was added each time; finally, the house that first sold the coal bought it in and effected delivery to the consumer.

It seems regrettable that the trade did not act until they received this broad hint from the Government authorities, but that the warning is having its effect is shown by the recent attitude of the individual operators.

We know of a particular instance wherein a shipper in acknowledging an order to a customer inserts the clause "this coal is sold to you with the distinct understanding that it is for delivery only to your domestic trade and will not be transferred to another dealer or sold to a broker." It is further reported that the individual operators from now on expect to take better care of their regular customers, although the prices made by them for May shipment range from 10 to 25c. higher than the larger shippers, and it would seem from this that they intend to be satisfied with a moderate advance.

It must not be supposed, however, that the individuals have been the only offenders in this respect, for during the past winter, when coal was extremely scarce, some of the large companies made heavy shipments to middlemen which were again resold at much higher prices.

Now that the matter has been brought to a head, it is to be hoped that the producing interests will abide by their new resolve and do all in their power to assist the country in the present crisis. Surely no greater patriotism could be shown than in endeavoring to keep the price of this most necessary commodity within the bounds of reason.

2

Shall Bosses Work on Idle Days?

The question as to the right of monthly men to work on idle days at labor which displaces the men who are paid by the day has caused no little trouble in Indiana. The local union of the United Mine Workers of America at the West Clinton Coal Co.'s mine, West Clinton, Ind., recently struck against the employment of mine "bosses" at day workers' jobs on idle days.

This strike was a clear violation of the agreement between the mine workers and the operators, and the district leaders took action to correct the situation by suspending the charter of the local. The local countered by appealing to the international board.

While there is nothing to be said as to the legality of a strike to modify a contract already made, there is some measure of reason in questioning whether the contract should permit bosses to do certain kinds of mine work on idle days. The wages for day work are usually lower than those earned by miners, and men accept the day wage largely because they feel that greater regularity of work compensates somewhat for the lower remuneration received for a day's labor. Another reason for the low wage being acquiesced in is that daymen profit by the overtime that they are often asked to work.

On the other hand, there are many odd jobs bringing doubtful remuneration to the operator which the monthly men now perform on idle days. This work would not be done at all if it swelled the payroll. Yet it is doubtful whether it would be well to leave it undone. If the daymen had to be employed for this work, the operator would probably find some way to avoid the doing of it.

Idle time is a grievance, and both parties need to realize it. The fixed charges of superintendence are a heavy burden on the operator. If monthly men must not do daymen's work on idle days, companies are going to lose a lot of labor for which they have paid. On the other hand, the dayman does not like to see the monthly man displacing him and preventing him from getting a good balance on the payroll.

Transcending the question, Who shall pay the bill? is the argument as to why the bill should be paid. Some day we shall find an economic balance wheel, a Sperry stabilizer, that will warp the planes of industry so that it will not flutter and fall as it is always doing. There should be no idle days in the coal trade.

Our present trouble has arisen from our bedabbling in socialism. We have regulated railroad rates but have not faced the fact that by so doing we have accepted all the results flowing out of such regulation. We have prevented coöperation on the part of the railroads and so crushed out large measures of railroad economy. We have not regulated the prices charged to railroads while we have regulated the charges made by them.

We have by these means demoralized the railroads and created a car, locomotive and sidetrack shortage from which for a while we must continue to suffer. When we get out of this trouble we shall be face to face with our old nightmare, seasonal stagnation. Both these difficulties can be met if we use good judgment. There is little reason why with a wise, prudent and instructed public our men and mines should not be kept steadily at work.

So long as that desideratum is not secured we shall find that there will be agitation for an amelioration of working conditions at the expense of industry. Men will be apt to want pay for idling, and companies will want the right to keep the monthly men working. The best solution is to be found in providing conditions making steady work possible. The anthracite region, with a more acute condition, has settled the problem, and it can be met also at the bituminous mines if the coal industry, the railroad industry and the public will only collaborate.

* * *

The Federal Trade Commission Report on the Anthracite Situation

The Federal Trade Commission's report, which appears elsewhere in this issue, is a commendable endeavor to allay the fear of a shortage of anthracite, which is being expressed in all quarters. The market has clearly got out of hands, and reliable statements of this character from Government sources should be a potent influence toward restoring confidence and relieving the exceedingly heavy pressure for coal. Soothing as the report may be to the public, however, it is to be regretted that the commission has rather too obviously overstretched itself to attain this end. No matter how desirable this may be, we do not believe it is a time for any weak sophistries. Let us by all means meet the issue squarely and know the worst as we go along.

The commission, after calling attention to the fact that the increase in the wage scale amounts to only between 24 and 30c. per ton, makes the further statement that there is no justification for a larger increase to be passed on to the consumer. This certainly does not seem a reasonable conclusion, in view of the extraordinary increase in the cost of everything connected with the retailing of coal. Drivers are receiving higher wages, while the cost of equipment, wagons, motor trucks, harness and horses shows a substantial increase. In addition to this there are special instances where very heavy increased costs have occurred in certain sections, as, for instance, in the barge rate to New England points, which now ranges

around \$3 per ton as compared with 65c. in normal times. The Boston retailers facing this increase will obviously not place much confidence in the report of the commission.

The commission states that it has received assurances from responsible anthracite operators and from the miners' representatives that this will be a year of unusually large production. It is quite true that shipments for the first quarter of the current year show a substantial increase over the same period last year, but fully two-thirds of this increase was due to a very light shipment in April, 1916, the tonnage for April of this year showing a tendency, if anything, to fall behind the rate of production for the preceding month.

In making this statement, it would also be interesting to know if the commission has given due consideration to the recent enlistment of miners and the possibility of further drafts for military service, not to mention the great scarcity of men owing to the attractive offers of employment from the iron and steel industries, munition plants, etc. In fact, it would be well for the commission to review some established precedents in this connection, as, for instance, the effects of the war on the production of Great Britain. That country in 1913, the last normal year preceding the war, produced 287½ million tons of coal, while in 1915, the first full year of the war, the output just crossed the 253-million ton mark, showing a decline of 34 million tons.

The commission's report is further misleading, for the reason that it entirely ignores the condition of the reserve stocks. It is a well-known fact that the tremendous storage reserves of the big companies was the only factor that prevented an actual famine of anthracite coal during the past winter, and even conceding that the companies will be able to increase their production this year it is not conceivable that they will be able to make this increase equal to the amount of coal that was picked up from storage last winter.

While no actual figures are available concerning these storage supplies, it is authoritatively estimated that the companies had between 8 and 10 million tons of coal at the beginning of the fall of 1915. Some of this was undoubtedly sent to the market during the winter months, but on the other hand the operators were conserving these reserves in every way possible, in anticipation of a suspension on the expiration of the wage agreement, Apr. 1, 1916. It is therefore estimated that on that date there were still approximately 7 million tons of coal in storage.

All this coal, amounting to more than 10 per cent. of the annual shipments, was picked up and sent to the market during the past winter. Assuming, then, that the production for the current year is equal to that of last year, it will still be 10 per cent. below the current rate of consumption. All indications point strongly to an increase in consumption, while, as shown before, it is difficult to see how the companies are even going to maintain production at the same level.

Other points made by the commission, such as the prompt unloading of coal at destinations, warnings to speculators, etc., are well taken, and the whole intent and purpose of the commission's statement is commendable. It must not, however, expect the coal men to place much confidence in them, unless they see fit to publish the truth, and the *whole* truth.

Discussion by Readers

Water Gage in Fan Ventilation

Letter No. 3—I am taking advantage of the invitation extended by *Coal Age*, in its issue of Apr. 21, p. 722, to discuss a certain phase of the question relating to the correct interpretation of water-gage readings in fan ventilation.

This is an interesting question, and I would preface my remarks with the statement that there is no absolute rule that will apply in every case. In other words, the effect of obstructing the free discharge of air from a fan is materially modified by its type of construction, which determines the point of maximum efficiency of the fan, in relation to power as compared with its efficiency in relation to capacity or air volume.

Let me say, then, that my experiments on different types of fans show that it is possible to have an increase of water gage caused by an obstruction in the air drift when operating one type of blower; and, on the other hand, it is possible to have a decrease in the water gage when operating a different type of fan.

In the hope of making my meaning clear, I have prepared a diagram showing the curves of mechanical efficiency of three types of centrifugal fans, and the cor-

tions varying from a free discharge of air into the atmosphere to the complete obstruction of the passage of air through the fan, obtained by closing the fan drift. In this connection, let me say that the capacity of any fan, for a given speed, depends on the resistance offered to the flow of air through the airways or passages.

The maximum capacity, in respect to air volume or yield, corresponds to a free delivery when the air is discharged directly into the atmosphere and meets with no resistance whatever. On the other hand, when the flow of air is completely obstructed by closing the air passages so that the fan is handling no air, the volume capacity drops to zero. This explanation should make clear to everyone the reading of the curves of mechanical efficiency of the three types of fans *A*, *B*, *C*, and the corresponding curves representing the ratio of actual water-gage reading to the theoretical gage due to the tip speed of the fan.

THREE TYPES OF FAN CONSTRUCTION

Three types of fan construction are here presented. Type *A* represents a double-inlet, steel-plate fan having radial blades, after the general style known as the Guibal fan. The diagram shows that this type of fan develops its maximum mechanical efficiency when its volume capacity varies from 40 to 50 per cent. of its free-delivery capacity, for the same speed.

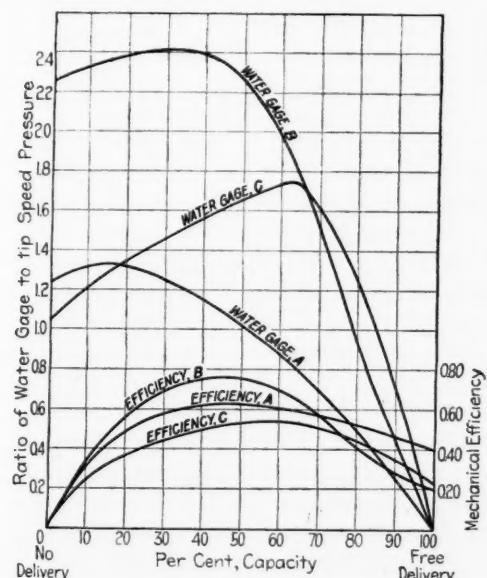
The diagram also shows that the water-gage ratio increases from this point, as the volume capacity decreases, until the latter reaches a point where the discharge is only 15 per cent. of the free-delivery discharge. This illustrates clearly the increase of water-gage reading due to an obstruction in the mine airways that causes a reduction in air volume, for the same speed of fan.

Again, type *B* represents a Sirocco fan. Here, as before, the diagram shows that this type of fan develops its maximum mechanical efficiency when the air-volume capacity ranges from 40 to 50 per cent. of the free-delivery capacity.

SIROCCO VS. GUIBAL TYPE

The noticeable feature that distinguishes this type from the Guibal type of fan, however, is shown by the curve representing the ratio of actual water-gage reading to the theoretical gage, for the same tip speed of the fan. This curve shows that while there is a similar increase of water gage with diminishing air volume up to the point of maximum efficiency, as in type *A*, there is still a very slight increase of water gage as the air volume drops further to 30 per cent. of the free-delivery discharge. But this slight increase would scarcely be observable in the ordinary U-shaped water gage. Then, as the air volume is further decreased, the curve shows a gradual decline of the water-gage ratio.

In its application to mine ventilation, the diagram shows that any obstruction of the airways in a mine ventilated by a Sirocco fan acting as a blower, causes an increase of water-gage reading up to or slightly beyond



CHARACTERISTIC CURVES IN FAN VENTILATION

responding curves representing the ratio of actual water-gage reading to the theoretical gage due to the tip speed of the fan, as calculated by the formula used for that purpose.

The percentage of mechanical efficiency is shown by the scale on the right of the diagram, while the scale on the left gives the ratio of actual water gage developed to the theoretical gage due to the tip speed of the fan, which was constant for all conditions and for the three types of fan represented.

The scale at the bottom of the diagram shows the percentage of capacity or yield in air volume, under condi-

the point where the fan develops its maximum efficiency, and a decline of water-gage reading due to the same cause, as the efficiency of the fan diminishes. This type of fan differs, in this respect, from fans of the Guibal type.

A third type of fan, C, is unusual and, as far as my knowledge goes, has never been employed in mine ventilation. But I have shown its characteristic curves in the diagram merely to illustrate the sharp contrast they present, in comparison with the other two types described, particularly the curve of water-gage ratio.

The selection of a fan for a given mine is a matter that requires the greatest care on the part of the engineer. He must decide if the fan is to be operated at maximum efficiency and determine the size required in accordance with the mine resistance to be overcome. In my opinion, it shows equally bad design to install too large a fan for the duty required as it does to select one that is too small for the work. The determining factor of a circulation is the water gage under which the required volume of air is to be circulated.

My remarks will, in a measure, confirm the statements of W. J. Montgomery, *Coal Age*, May 5, p. 799, and will, I hope, help to elucidate the question of the value of water-gage readings in mine ventilation.

W. A. ROWE,
Pittsburgh, Penn. American Blower Co.

Duties of Mine Examiners

Letter No. 4—Referring to the letter of Elvis Williams, *Coal Age*, Apr. 28, p. 759, let me say that, by reason of an unhappy experience that resulted in the loss of one life and the injury of a fellow worker, I am compelled to disagree with him in regard to the duties of a mine examiner.

Mr. Williams quotes a section of the Coal Mining Laws of Illinois that makes every miner responsible for the safekeeping of his place. Of course, it is right that a miner should make his place safe and do this work without compensation other than the securing of his own safety.

I regret to say, however, that there are quite a few men working in our mines who are too careless to be left to look after their own safety and must be closely watched. I believe it is as much the duty of a mine examiner to see that a miner makes his place safe in respect to securing the roof and coal, as it is his duty to see that there are no dangerous accumulations of gas in the place.

Mr. Williams will allow me to draw his attention to a previous clause of the same law from which he has quoted, Sec. 21 (b), which relates to the duties of "Certified Mine Examiners" and reads in part as follows:

6. When working places are discovered in which there are recent falls or dangerous roof or dangerous conditions, to place a conspicuous mark or sign thereat as notice to all men to keep out.

I believe that if this law had been in force a few years ago, it would have saved the death of at least one man and the injury of another. I refer to an accident that occurred when, as mine examiner, I found a loose piece of rock at the face of an entry in which two men were working. I entered the fact in my report book that morning, as required by law, but did not mark the men out or withhold their checks, that not being the custom

or requirement of the law at that time. The result was the rock fell, about 1:30 p.m. the same day, and caught the men, as stated.

This accident has always been a matter of deep regret to me, although I am satisfied that my duty was performed when the condition of the roof was reported as usual and customary at that time. Had the men had any regard for their own safety, they would have secured the rock and the accident would not have happened. But, as I have just said, many mine workers are careless and must be watched to insure their greater safety. This occurrence, more than anything else, has impressed me with the necessity of marking men out of their working places when a dangerous piece of top is found, and that has since been my custom.

J. T. ANDERSON.

Nashville, Ill.

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Making Up Cartridges in Mines

Letter No. 6—Referring to the discussion of whether cartridges should be made up at home or in the mine, I am of the opinion that there are more accidents caused by making up cartridges at home than when this work is done in the mine. However, neither the home nor the mine is the place to keep a 25-lb. keg of powder.

Assuming a miner makes up his cartridges at home, let me ask how and where does he do this work, and where does he keep his powder while he is away from home? In answer to the first question, is it not true that the cartridges are made up at night or in the early morning by lamp light, and often the miner will seek a comfortable place near a warm fire while doing his work, having little regard for the danger in the handling of powder under these conditions?

DANGER OF KEEPING POWDER AT HOME

In regard to a safe place to store powder at home, how often will it be found that the powder keg is set out in the coal house or stored away in some dark closet where it is liable to cause trouble when an open light is carried into the place by a child or a careless woman, or by the miner himself when getting the coal for the night or hunting some article of clothing hanging in the closet.

May I ask, Is it possible to keep powder at home, in a place where mischievous children will not find it? I have known of powder accidents to occur when a drunken miner has attempted a Fourth-of-July celebration, which would not have been possible had the powder been kept at the mines. Regarding the fact that mine fires must be fought at a disadvantage when powder is kept in the working places, I would ask is not the danger of fire greater in the home than in the mine?

The safest plan to adopt, in respect to the use of powder for blasting in the mine, is to store the explosive in a suitable magazine and permit miners to take into the mine only sufficient powder for the day's work. This thought was impressed forcibly on my mind a few days since, by an incident that occurred in the place where I was working. I had stored my keg of powder on one side of the breakthrough leading to an adjoining room, while I kept my fuse, papers, etc., in a keg on the other side of the opening.

On this occasion, the machineman had run a cable through the breakthrough to operate the cutting machine. While this work was in progress, a fuse blew out right in

the breakthrough, and within 5 ft. of my powder keg. Had I kept the powder in the breakthrough, as many miners do, the consequences might have been serious. As it was, the danger was too imminent to make me feel comfortable.

I want to indorse the method described by James Potts, *Coal Age*, Mar. 17, p. 485. I have used this method for several years and have found it of great advantage, although it seems difficult for some miners to use it in making up their cartridges. I often use a double thickness of paper and have, at times, used three thicknesses, which gives greater strength to the cartridge. I prefer to use two cartridges of lesser length than a single long cartridge, which is liable to bulge and stick in the hole when charging.

W. H. LUXTON.

Linton, Ind.

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Electric vs. Oil Safety Lamps

Letter No. 1—In his letter on "Ignition of Gas by Electric Lamps, *Coal Age*, Apr. 28, p. 758, W. H. Noone has raised the question of the relative safety of electric mine lamps and gauze safety lamps burning oil, for general use in mines. He appears to speak very highly of the electric lamp, but experience inclines me to favor the use of oil-burning lamps, my preference being the Wolf lamp, with which I am well acquainted, although I have worked with the electric lamp as well.

In my opinion, there are several reasons why a gauze safety lamp is safer for general use at the working face than an electric mine lamp. Suppose, for example, two men are working in a place with electric lamps, and the lamp of one dies out. The man must needs borrow his buddy's lamp and go in search of another light before he can proceed with his work. This delays both himself and his buddy, who are unable to work until he returns.

On the other hand, if these men are using the Wolf lamp, and one of the lamps is extinguished, it is generally an easy matter to relight the lamp. Although, occasionally, this may give a little trouble, there is not nearly the same inconvenience that is caused when an electric lamp gives out.

ELECTRIC LAMP GIVES NO WARNING OF DANGER

Suppose, again, experienced miners are at work drawing pillars in a place that has been examined and found safe by the mine foreman or one of his assistants or the fireboss. The men are using electric mine lamps, but the official who examined the place had a gauze safety lamp.

Now, it is well known that gas or blackdamp may appear suddenly in a place where pillars are being drawn. It is also well known that the mine officials whose duty it is to examine these places cannot be on hand at all times. In case a sudden rush of gas occurs, these miners are not warned of its presence and are in danger of being overcome with the blackdamp; or one of their lamps, if broken, may ignite the marsh gas, should it be present.

If the men, in this case, were working with safety lamps, they would be at once warned of their danger by the indications of the lamp. As a practical mining man, I say give me some kind of gauze safety lamp, such as the Wolf lamp, that is always a safe guide in respect to the gaseous condition of the mine air. It will not be

necessary, then, to rely on the examination of the place made by the mine officials, who cannot be present at all times and who may even be guilty of neglect in making the examination.

Mr. Noone writes from Thomas, W. Va., where I formerly worked, as well as in the mines at Coketon, a mile below Thomas. I want to say that the conditions in those mines are nothing to be compared with the conditions in the mines where I am now employed. The difference in conditions may make the use of electric mine lamps a lesser hazard.

However, what appeals to me is the fact that if mine officials are obliged to carry gauze safety lamps to examine the working places in a mine, why should not the proper protection of the miners demand that they use the same type of lamp while working at the face? In respect to damage that is liable to occur while the miner is at work, this is no more probable with a safety lamp than with an electric lamp, both of which require careful use.

JOHN H. WILEY.

Olyphant Furnace, Penn.

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Mine Discipline

Letter No. 4—I read and reread the letter of G. H. Lewis, *Coal Age*, Apr. 7, p. 634. Mr. Lewis seemingly has in mind a kind of discipline different from what I would advocate. I thoroughly believe in mine discipline, but think this should only follow a careful investigation into the facts, before the penalty is imposed.

To discipline a man for an act, as we say "right off the bat," will often make a good man sore at the boss and may not have the desired effect. I realize fully that there are men who are not disturbed by any form of discipline that can be administered short of a discharge, and these men should be treated accordingly.

UNWISE DISCIPLINE RESULTS FATALLY

In this connection, an incident that happened some 15 years ago will be of interest. It resulted in an accident that cost the lives of ten innocent men and a loss of \$50,000 to the company. The mine was a large one, opened by two shafts several hundred feet in depth. The hoisting equipment consisted of large engines that were difficult to handle and with which the men were little acquainted. As a result, several minor accidents occurred that caused no loss of life and were of little consequence in respect to the damage done.

My story begins when a new superintendent and a new mine boss came on the job. Orders were issued that the next man responsible for an accident would be severely disciplined. One can readily imagine the state of mind this produced among the men, whose duties compelled them to handle the equipment. This is what happened not long after the orders were issued:

A breakdown disabled a large air compressor located in a building a short distance from the engine house. It was during the night shift, and the hoisting engineer left his engine and went over to assist the man in charge of the air-compressor plant. A little later, the engineer answered a signal to lower an empty cage to the new vein that was being opened 900 ft. below the surface.

The engine was started, and everything went all right till the cage was within a short distance of the landing at the new vein, when the engineer, who should have been

thinking only of what he was doing, was suddenly struck with a bright idea in regard to remedying the trouble with the air compressor. He was forcibly aroused from this brief distraction by the vibration caused by the cage carrying away the wings at the new vein and landing 30 ft. below at the bottom of the excavation, where the bottom was knocked out of the cage.

Of course, the engineer was to blame for his absent-mindedness, which was due to his anxiety to assist the work of the company. It was a serious mistake for an engineer to make; but, unfortunately, the discipline administered by the superintendent paved the way to a much greater calamity. The next morning the engineer was given 15 days to think the matter over and learn his lesson. This was done by the superintendent without his asking any questions as to how the accident occurred or saying a word other than to administer the penalty.

A SEQUENCE OF ACCIDENTS

Following this lesser accident, a more serious one occurred in which the engineer who had been appointed to fill the place temporarily, and who was far less acquainted with the operation of the engine than the man laid off, allowed his engine to overwind. The headgear at the top of the shaft was torn from its place and the tower wrecked. Although no fatality resulted from this accident, the superintendent was greatly angered and vented his spite on the regular engineer, whose penalty he extended 30 days.

The worst was yet to come, however, for, before the 30 days were up, certain parts of the engine were out of adjustment and gave much trouble. Because no one understood the engine well enough to correct the adjustment, the engineer finally lost control when lowering ten men down the shaft. The result was that the men were dashed to pieces at the bottom and ten lives were suddenly ushered into eternity. This was the sad result of unwise discipline, which should have been administered more in accord with the conditions existing at this mine.

Let me suggest, then, that all mine discipline should be tempered with patience and due caution. No penalty should be imposed before a careful and thorough investigation is made of the circumstances that led to the act and due consideration is given to the conditions that will follow the proposed discipline of the guilty party. There are cases where admonition is needed more than severe and unrestrained discipline. The Golden Rule should always be the guiding star, and many errors of management will then be avoided. —W. A. BARRETT.

Nanticoke, Penn.

■

Mine Safety Inspector

Letter No. 4—It would appear that at least six-tenths of the accidents from falls of roof and coal, in mines, are due to the carelessness or neglect of that official known in many sections as the "rib boss." This man is no more than a mine-safety inspector or an assistant foreman. His particular duties, in some mines, may be to supervise the drawing back of the ribs or pillars, but he is generally expected to look after the safety of all men working at the face.

I have known men to be employed for this work who were wholly incompetent to fill the position, never having loaded a car of coal, set timbers or laid tracks in the

mine. It is difficult to understand how such men can be expected to give the necessary instructions to miners at the working face, where the great proportion of fatal accidents occur.

No one will deny that the men selected for this position should be capable of instructing miners how to timber their places and mine their coal with the greatest safety to themselves and in a manner to secure the largest tonnage with the least possible effort and expense. In machine mining there is often a large waste of coal, owing to machine-runners leaving from 6 in. to 18 in. and, at times, 2 ft. of coal in the bottom. To avoid this waste they must be carefully watched.

Many accidents occur at the coal face, because of the improper setting of posts. Some miners will stand a post with a good cap-piece and footboard where it should be stood with a cap-piece only. I have found it of great advantage to sharpen or taper the foot of the post, as this frequently prevents the breaking of the timber when it takes the weight. A post set so that it cannot yield will be broken by the weight, and a heavy fall of roof will result. When the bottom has a tendency to heave, my experience is that it is better to use no footboard, which might cause the post to be broken.

It is the duty of a safety inspector to look after such matters, not only to avoid possible accidents from roof falls due to broken timbers, but to enable a larger recovery of timber from the waste. In order to fulfill these duties the man should have at least 10 years' experience in the mines, digging coal, timbering and doing other work. Only in this manner can he be fitted to perform the duties of a rib boss or mine safety inspector.

Oliphant Furnace, Penn.

SAFETY.

Assistant Mine Inspectors

Letter No. 2—I want to say a word in defense of the proposition to create the office of assistant mine inspector, in Pennsylvania, which has already been made a feature of a bill presented to the state legislature relating to the anthracite mines. I notice that R. W. Lightburn, in his letter, *Coal Age*, Mar. 31, p. 572, does not favor the proposition but advocates, instead, increasing the present force of mine inspectors.

My opinion is that assistant inspectors would not only prove more efficient in the work of the Department of Mines, but their appointment would mean a saving of several thousands of dollars to the state, as compared with an increase of, say 20 mine inspectors. The salary of the mine inspector, at the present time, is \$3000 per annum, and this increase would mean an extra expenditure of $20 \times 3000 = \$60,000$ per annum. Now, assuming the assistant mine inspector is paid a salary of \$1500 per annum, the total expenditure for 30 assistant inspectors, in the bituminous mines, would be $30 \times 1500 = \$45,000$ per annum, which would show a saving of \$15,000 in the bituminous district alone.

It is my earnest hope that this feature of the anthracite bill will receive a hearty approval of state legislators. If the proposition is tried out successfully in the anthracite mines, I am convinced that it will not be long before a similar law will be passed providing the same service in the bituminous mines of the state.

Every practical mining man realizes the effectiveness of the assistant mine foreman in looking after the wel-

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fare of mine workers and conditions regarding the safety of the mine. There can hardly be a doubt that the assistant mine inspector would perform an equally important service and constitute a valuable adjunct in the work of mine inspection.

With regard to the examination that an assistant mine inspector should pass, a suitable analogy can be found in the relative importance attaching to the examination of assistant mine foremen and foremen. A candidate for mine foremanship must obtain 80 per cent. in the examination, while an assistant foreman is required to obtain but 70 per cent. By way of comparison, it would seem only fair that if the mine inspector is required to obtain 90 per cent. in examination, the candidate for assistant mine inspectorship should be expected to obtain 75 or 80 per cent. in the same examination.

In conclusion, let me ask Mr. Lightburn, and others who are opposed to the appointment of assistant mine inspectors, preferring instead to increase the force of inspectors, whether they think that a mine would be better officered by placing it in the charge of two mine foremen, instead of a mine foreman and a sufficient number of assistant foremen to help him in the discharge of his duties in the mine.

Madera, Penn.

SAMUEL JONES.

3

Service That Is Appreciated

Letter No. 4—The story of "Dave" that appeared in the inquiry, *Coal Age*, Vol. 10, p. 776, and its sequel as given by S. D. Hainley, Apr. 7, p. 636, is an interesting one to all men working under like conditions, which includes the majority of mine workers. The story reminds me of two incidents in my own knowledge that bear a striking analogy to the story of Dave and which I will recite briefly.

The first incident is that of a mine foreman who had been in the employ of his company for about 12 years. His service as foreman had shown him to be a man of ability; but, lacking sufficient confidence or desire for a higher position, he had never aspired to become a mine superintendent. His long service had made him fully acquainted with his men and with the conditions existing in the mine.

Although he was well fitted, both by knowledge and experience, to fill the position of superintendent, his fitness for that office had not been recognized when a change was made and a new superintendent entered the employ of the company.

THE NEW SUPERINTENDENT AND HIS DEPENDENCIES

The newcomer was a man who, like many others, had numerous friends among his own kin for whom he sought good positions. As a result, the salaried men working under him soon found their lives made miserable by many new requirements and reductions in pay.

The mine foreman proved no exception to the eliminating processes of the superintendent, but he stuck by his place for a year, when he began looking about for another position. He had not long to look, however, for he was well known and had acquired a good reputation for handling and holding his men. He treated the company with entire respect, but tendered his resignation and entered the employ of another company in an adjoining camp,

not far distant from his own home. It was a new mine but our friend was equal to the occasion.

He had already made good as mine foreman in his new place when the superintendent of the company was taken suddenly ill and rushed away to a city hospital where he underwent an operation that terminated his life. The officials of the new company, recognizing the worth of the mine foreman, who had only been four months in their employ, did not hesitate to appoint him to fill the position left vacant by the death of the superintendent.

The appointment of the mine foreman to the superintendency of the new mine opened the eyes of his old employers, and he had not been in that position much over a year when they sent for him and offered him the place of the superintendent who had been the cause of his leaving that company.

Perhaps some will say that the man was himself as much to blame as the officials whom he had served so long, because he had never put himself forward or shown any desire for the higher position. All the blame, however, does not rest on this humble mine foreman. His employers should have recognized and rewarded his manifest ability, and they naturally suffered from their own lack of foresight.

The second incident is an unfortunate example of the lack of penetration on the part of the mine management and the crookedness of the under officials, who sought to protect themselves from the results of their own neglect and carelessness.

A man who had spent a short time in the machine shop and was acting as general repairman in a mine was injured in a manner that partially crippled him for life. The injury resulted from an accident for which both the superintendent and the mine foreman were responsible, because of their neglect to furnish the necessary safeguards and regulations that would have relieved them from such responsibility.

SHAMEFUL TRICK OF A SUPERINTENDENT

In order to save both himself and the foreman from blame, the superintendent misrepresented the case to the manager and secured his permission to settle the matter, which he explained he could do and avoid the possibility of lawsuit or claim for damages.

Notwithstanding the fact that the assistant mine foreman at this mine was a practical miner who had come up from the ranks and was a hustler who had spent all his life in the mines, besides gaining a good education that fitted him well for the position he held, the superintendent planned to give his job to the crippled repairman.

With this end in view, the foreman was told to inform his assistant that it was necessary to reduce his pay, knowing that the assistant would quit rather than accept the reduction, which proved to be the case. The injured repairman was at once given the place, and the actual facts were never known to the manager who, it is safe to say, had he known the truth, would have quickly discharged both the superintendent and the mine foreman for their duplicity.

These two incidents show clearly some of the difficulties that surround honest, hard working and able mine officials. A wise management will therefore look carefully into the motives and character for honesty of the men whom they place in charge of their operations.

Herrin, Ill.

OSTEL BULLOCK.

Inquiries of General Interest

Temperature, Pressure, Density of Air

I am somewhat mixed in regard to the use of the formula for calculating the weight (W) of a given volume (V) of air, at a temperature (T) and under a pressure (p). The formula is as follows:

$$W = \frac{pV}{53.3T}$$

I want to ask, what does the constant, 53.3, represent in this formula? Also, assuming a constant volume of air, (1) What change in weight will be produced by a change in temperature? (2) What change in weight will be produced by a change in pressure? (3) Can these questions be answered by reference to the formula mentioned?

We know that the weight of 1 cu.ft. of air, at 60 deg. F., and a pressure of 14.7 lb. per sq. in., is 0.0766 lb. The weight of 50 cu.ft. of air, at this temperature and pressure, would then be $50 \times 0.0766 = 3.83$ lb. However, using the foregoing formula, I find this weight to be 27 lb. I am at a loss to understand the true meaning of "volume remaining constant," and hope you can make this plain to me.

STUDENT.

Peru, Ill.

In the formula given by this correspondent, the weight is expressed in pounds; the volume, in cubic feet; the temperature is the absolute temperature, expressed in Fahrenheit degrees, and the pressure must be expressed in pounds per square foot if the constant 53.3 is used, because this constant represents the volume, in cubic feet, of 1 lb. of air at an absolute temperature of 1 deg. F. and a pressure of 1 lb. per sq. ft. Practically the same results will be obtained by using the constant 0.37 and expressing the pressure in pounds per square inch, since $0.37 \times 144 = 53.28$.

The weight of 50 cu.ft. of air, at a temperature of 60 deg. F., and a pressure of 14.7 lb. per sq. in., or $14.7 \times 144 = 2116.8$ lb. per sq.ft., is

$$W = \frac{2116.8 \times 50}{53.28(460 + 60)} = 3.82 \text{ lb.}$$

It does not appear how the correspondent could obtain a result of 27 lb. as the weight of 50 cu.ft. of air, at the given temperature and pressure.

The questions relating to the change in weight produced by a change in temperature or pressure may refer to the unit weight, or weight per unit volume, of free air; or it might be understood as referring to the weight of a given mass of air, which meaning would seem to be implied by the words, "the volume remaining constant."

Referring to the formula given by this correspondent and assuming a constant volume of a given weight or mass of air, any change in pressure will be accompanied by a like change in the absolute temperature of the air. An increase of temperature must be accompanied by an

increase of pressure when the air is confined so that no change in volume can take place.

On the other hand, assuming free air, or unconfined, any change in pressure or temperature produces a corresponding change in volume. In this case, the expression "for a constant volume" makes the weight refer to any given volume or unit volume, and the formula then expresses the weight per unit volume, or the density of the air.



Mine Damps

Kindly permit me to ask the following questions in regard to mine damps, which I have been studying recently: (1) How would you detect carbon dioxide from blackdamp? (2) How would you detect flashdamp from firedamp? (3) What are the specific gravities of blackdamp, flashdamp and afterdamp? (4) Give the chemical symbols of blackdamp, flashdamp and afterdamp.

Forbes, Colo.

STUDENT.

1. There are no means of detecting carbon dioxide from the blackdamp found in mines, except by chemical analysis which must be made in a laboratory. Carbon dioxide is one of the chief constituents of blackdamp, which consists of a mixture of that gas with nitrogen and air, in varying proportions. While a lamp will burn with increasing dimness as the percentage of available oxygen is decreased, a light would be quickly extinguished in an atmosphere of pure carbon dioxide, which contains no available oxygen to support the flame.

2. When a safety lamp is raised into a flashdamp mixture, a flame cap appears momentarily and again disappears almost as quickly. Flashdamp is a mixture of marsh gas and carbon dioxide, the mixture having taken place in the absence of air or where the supply of air is very limited. This is more apt to occur from carbon dioxide generated in an overlying seam coming in contact with marsh gas given off in the roof of the lower seam. The mixed gases then diffusing into the mine air below gives a mixture that tends to dim or extinguish flame, according to the amount of air it contains. A flashdamp mixture is often lighter than air and presents the peculiarity strange to mines, of extinguishing a light at the roof.

When the lamp is first quickly raised into such a mixture, there is sufficient pure air in the combustion chamber of the lamp to allow of the formation of a flame cap, which promptly disappears as the air is exhausted and the chamber becomes filled with the extinctive gases. A study of the behavior of the flame cap in this mixture has resulted in giving to it the name "flashdamp."

3, 4. It is impossible to give either the specific gravities or chemical symbols of blackdamp, flashdamp or afterdamp mixtures, because these mixtures are exceedingly variable. Flashdamp is generally somewhat lighter than air, while blackdamp and afterdamp are usually heavier than air.

Examination Questions

Alabama First-Class Examination, Held Jan. 22-25, 1917

(Selected Questions)

Ques.—What effect has undiluted or pure carbureted hydrogen gas on life and on fire, in mines?

Ans.—Carbureted hydrogen, or marsh gas, undiluted, contains no available oxygen and will not support life or combustion. Its effect, when breathed, is to suffocate by excluding the oxygen of the air from the lungs. Its effect on combustion is to extinguish the flame. As this gas occurs in mines, however, its diffusion into the air is very rapid, forming firedamp.

Ques.—State the conditions under which the presence of the various mine gases may be expected in mines. How may each be detected?

Ans.—Methane, or marsh gas, may be expected where fresh faces of coal are being exposed, in a seam generating this gas. The gas may also be found mixed with

blackdamp, which may always be expected to be found accumulated in poorly ventilated places, dip workings, swamps and other low places in mines.

Sulphureted hydrogen is of somewhat rare occurrence in mines. It is generally found in low damp places where the seam contains much pyrite or sulphide of iron FeS_2 .

Ques.—What changes in roof, bottom and coal seam are met with when approaching a fault? What other conditions may be expected?

Ans.—When approaching a fault, in the working of a coal seam, the roof and bottom of the seam are more or less broken and present irregularities. Where the fault is one of dislocation and the strata have slipped along the line of the fault, it is common to find them somewhat bent in the direction of the slip. At times, spars or clay seams appear interfoliated with the strata in proximity to a fault. The coal is generally harder and the mining more difficult where a seam is faulted.

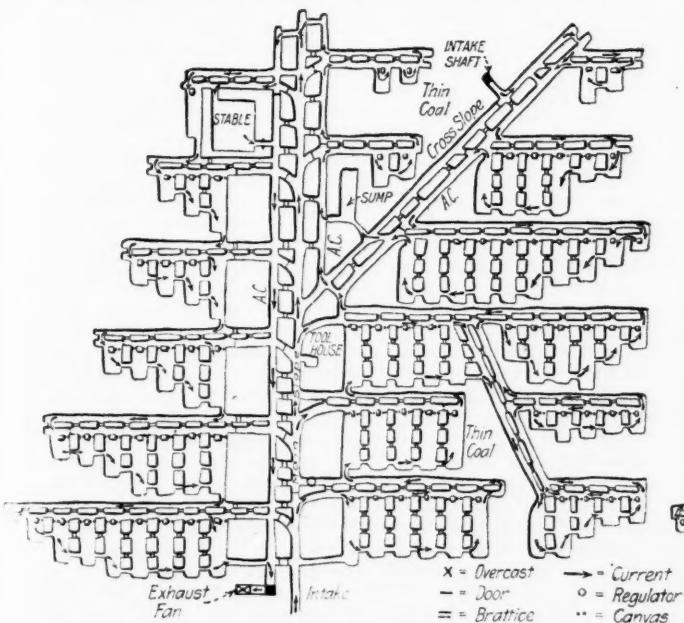


FIG. 1. VENTILATION BY CONTINUOUS CURRENT

air in varying proportions, in the abandoned workings and other void places in such seams. Gas may generally be expected when approaching a fault line.

Carbon monoxide may commonly be expected in the afterdamp of an explosion and occurs, also, as a product of the explosion of powder, in blasting, or wherever slow combustion of fine coal and slack takes place in the gob or poorly ventilated places in a mine. It is the result of the combustion of carbonaceous material in a limited supply of air.

Carbon dioxide results when the combustion of carbon takes place in a plentiful supply of air. It is also produced by the burning of lamps, breathing of men and animals, and other forms of slow or active combustion. This gas and nitrogen form the chief constituents of

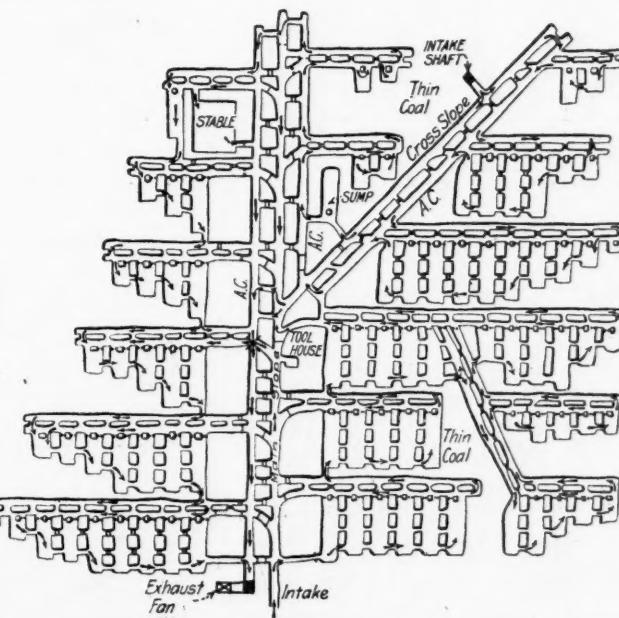


FIG. 2. SPLIT SYSTEM OF VENTILATION

Either water or gas, or both, may be expected to develop in the line of a fault. The water and gas come from other formations, either above or below the coal, and find their way along the fault line.

Ques.—It is required to ventilate the mine shown in the accompanying figure. This is to be done in two ways: First, by coursing the air continuously so as to ventilate the mine by a single current; second, by splitting the air so as to divide the mine into separate ventilation districts.

Ans.—In Fig. 1 the mine is shown ventilated by a continuous current, except that the air enters at the two intake openings shown in the plan.

In Fig. 2 the circulation is divided into a number of separate splits, as indicated.

Book Reviews

Latest Volume on Military Explosives

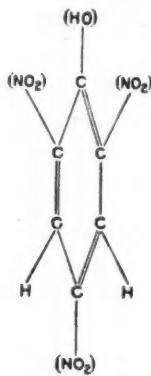
•NOTES ON MILITARY EXPLOSIVES—By Erasmus M. Weaver, major general, U. S. Army, chief of coast artillery. Fourth edition, revised and enlarged. Pages viii + 372 + 10 index; 6 x 9 $\frac{1}{4}$ in.; 23 illustrations. John Wiley & Sons, Inc., 432 Fourth Ave., New York City, publisher. Cloth boards. Price, \$3.25.

This volume, a textbook that has the great merit of simplicity, is in use at West Point. The reader who does not know much about organic chemistry and the building up of molecular structures can read this book without mystification. It opens with the "Principles of Chemistry," to which 49 pages are given. The object of this review of chemistry is not to teach the reader that subject in general, but to lead up to the chemistry of explosives. It is followed by a chapter on the "Substances Used in the Manufacture of Explosives," to which 41 pages are devoted. Then, in turn, follow remarks on explosives in general and separate chapters on the three types of military explosives, to each of which three names may be given expressing respectively their mode of action, their function in military engineering and their popular designation: (1) Progressive, propelling or low explosives, (2) detonating, disruptive or high explosives and (3) detonators, exploders or fulminates.

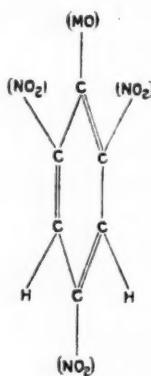
A quotation from the preface may be appropriate in this connection. The author says:

The great propellant explosive for guns continues to be nitrocellulose, alone or in combination with nitroglycerin. The explosive for charging shells appears to have been quite definitely reduced to picric acid or some derivative thereof; that for submarine mines and torpedoes to trinitrotoluol or guncotton. As to the old nitrate mixtures, they appear to be limited to hand grenades, rockets and pyrotechnics.

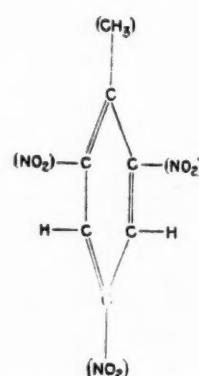
Then follow articles on service tests of explosives, their storage, the handling of high explosives and the methods used for demolishing property and bridges. The book concludes



PICRIC ACID



PICRATES



TRINITROTOLUOL

with three appendixes, the last being entitled "Rôle of Chemistry in the War." This appeared first in the "Journal" of the Franklin Institution.

As so much interest is being shown at present in picric acid, picrates and trinitrotoluol, the structural formulas of all three are given in the diagram above as they are stated in this volume, it being prefaced that M represents some metal radicle. The author remarks regarding trinitrotoluol, which is also termed trotol, tritone, trinitrotoluene, trinitromethylbenzene, tolite, trilite, trinol, trotol and T.N.T.:

Its structural formula is similar to that of picric acid and the picrates, except that the organic radical CH_3 (methyl) replaces the hydroxyl radical, HO, of picric acid and the metallic radicles of the picrates. From this chemical similarity it might well be assumed that it would occupy a field in explosives analogous to that of picric acid and the picrates, and this is the fact.

It has, however, some advantages of an important nature which suggest that it may eventually replace both picric acid and the picrates as a shell-filler, the most important of which is that it does not form sensitive compounds by combination with the metals. Its explosive force also is slightly less than either picric acid or the picrates.

Experiments at Picatinny Arsenal indicate that the theoretical force of picric acid is 135,800 pounds per square inch,

that of Explosive D 124,600 pounds per square inch, and that of trinitrotoluol is 119,000 pounds per square inch.

The material is neither difficult nor dangerous to make. Commercial mononitrotoluene is made by acting on 1 part toluene with 3 parts, by weight, of mixed nitric and sulphuric acids (40HNO_3 , sp. gr. 1.495, to 60 H_2SO_4 , sp. gr. 1.84); the result is a mixture of isomeric bodies. This mixture may be converted into dinitrotoluene by nitrating with 2 parts of the acid mixture to 1 part of the mononitro product; the dinitro products thus produced may be converted into trinitrotoluol by nitrating again with stronger nitric acid, but there is a considerable loss of acid and the yield is not high.

The Haussermann process, which is said to be more advantageous, then follows at some length, but enough has been quoted to show how the explosive is built up.

This book will be interesting to all who desire to serve their country as military engineers at the "front" or to make the explosives that the needs of the front demand, the most important of which are derivatives of the byproducts of coke.

X

Technique of Successful Job Hunting

SELLING YOUR SERVICES—Anonymous publication. Pages 176, 5 $\frac{1}{2}$ x 8 $\frac{1}{4}$ in., no illustrations. The Sales Service Co., 627 Madison Ave., New York City, publisher. Paper boards. Price, \$1 net.

There is no more interesting study in psychology than the attitude of the average man to his work after he has continued at it for some time. He regards the particular line of work, even the particular job and the particular company for which he is working, as the be-all and end-all of his existence. His every faculty of attention is given to it.

To most of us the suggestion that we should regard ourselves as salesmen of our own services and talents will come as a distinct shock. Perhaps it is well that most of us do not regard ourselves as brokers of our own brains but have an element of social obligation in us that tells us that we are here to do our life work and not primarily to get a big price for what we accomplish.

Perhaps it is not well to see too plainly and too crudely that we have talent and bodily effort to sell, for if we see it too clearly the world as a whole may band itself to thwart our purposes. Such a planning to market services successfully may be the ultimate outcome of certain perfectly true premises, but somehow nature revolts at such a viewpoint in life, and our careful planning may end only in disaster. The arguments of "military necessity," which we have recently heard, have an element of reason in them. On the whole, however, they have failed because the public would not admit of them. Similarly, the man who looks upon his services merely as a marketable product to be advertised, pushed, bartered and sold will so dull the fine edge of human purpose that his services will not be in demand and the public will avoid him.

But all of us, now and then, in certain stages of our careers, have our brains and bodies for sale, with certain definite restrictions, good both for us and the buyer, and then we become for the nonce members of the bargaining, bartering world and should study its ways and works and follow them in a degree. This book, "Selling Your Services," gives some valuable hints as to the manner in which to do it. Readable and clever, it braces up the job seeker in a work which to most of us is the weariest kind of labor. Most of us would rather try to sell any commodity than that one commodity which is most valuable to us and to the public in general.

X

HOW TO RUN AN AUTOMOBILE—By Victor W. Page. Pages 170 + 8 index; 5 x 7 $\frac{1}{2}$ in.; 72 illustrations. Norman W. Henley Publishing Co., 132 Nassau St., New York City. Cloth boards. Price, \$1.

The automobile has become such a general adjunct to the modern coal plant that there seems no impropriety in drawing attention to the remarkable series of automobile books and charts written and prepared respectively by Victor W. Page on the automobile and to the book above mentioned in particular. The latter contains four chapters—Automobile Parts and Their Functions, General Starting and Driving Instructions, Typical 1917 Control Systems and Care of Automobiles. No less than 30 control systems now in use are described. Though photographs have formed the basis of most of the illustrations, by the judicious use of arrows the parts and their purposes are made abundantly plain.

Coal and Coke News

Washington, D. C.

All coal mines equipped with box-car loaders are being listed by the United States Geological Survey. Operators are being requested to state if they are prepared to load coal into box cars from chutes and if their tipplers are so constructed as to permit the installation of such chutes. This information is highly desirable at this time, so as to acquaint the government with the facts necessary to an intelligent distribution of cars.

A merit-rating schedule designed to reduce coal mining insurance to a more intelligent basis has been drafted by H. M. Wolfson, of the Bureau of Mines, and submitted to George S. Rice, the chief mining engineer, for approval. The work is based on the following axioms:

1. It is right to allow better rates to the operator who reduces the risks through safety precautions.

2. This shall be accomplished by introducing a rate factor based upon the precautions taken by the insured.

3. As all must pay a minimum rate, the whole rate must consist of this minimum plus an additional amount varying with the amount of deficiency in precaution.

4. The increment of rate due to deficiency in precaution can be made to vary with a number factor expressing the relative amount of the deficiency.

5. A schedule of rates can be made for obtaining the number factor.

In the schedule, every effort will be made to set clear standards in every item. It is realized that any ratings based on personal judgments open the way for claims of discrimination, rumors of corruption and bad feeling.

HARRISBURG, PENN.

There was an unexpected movement in coal legislation in the House on May 9, and as a culmination of this activity the Dawson measure, which would distribute to the municipalities in coal producing counties 50 per cent of the 2 per cent. coal tonnage tax, has been reported out of committee with a favorable recommendation.

Previous to the reporting of the Dawson bill, the regular coal tax bill for anthracite and bituminous coal, together with the other revenue-raising measures, went through the house with little or no opposition. There was not a word of discussion in the passage of any of these measures and the largest vote recorded against any was 3. These measures are expected to net the state \$7,000,000 of additional revenue.

The third bill of interest to the hard coal section was a decision by Chairman Ramsey to put the Scarlet mine cave bill on the calendar. This bill, presented by Ramsey, will also be put out. Both measures will make their appearance following a conference with the members of the Tener Mine Cave Commission.

The Ramsey bill is the measure placing responsibility for surface safety upon the state and appointing mine inspectors whose duty it will be to look after this condition. The Scarlet measure is the bill of the Scranton Surface Protective Association, regulating mining so that it can not interfere with or jeopardize life and property on the surface. The Scarlet bill has passed two readings in the Senate, but was recommitted to committee.

There is a feeling among the legislators that when the committee meets to take up this question of mine caves a proposition will be made by the coal corporations to repair the damage caused by the surface subsidence.

It is said on good authority here that such a proposal will be made, and that arrangements are now being made by representatives of the coal companies to establish among themselves a fund to take care of this work, so that the smaller coal companies may not be forced into bankruptcy by reason of the large expense involved in the repair of real estate.

Branded as flank attacks on the bill introduced in the House by Mr. McNichol, which provides for an 8-hour workday for all miners now employed, measures sponsored by Assemblymen Mervine, of Monroe, and Miller of Lehigh, would remove almost every protection the law now gives to children toilers.

The Mervine bill is a wholesale repealer. It would make the matter of working hours "during the duration of the war" a matter of private contract between the employer and minor seeking employment.

In case such a "private contract" exists, the employer "shall not be deemed to have violated

any provisions of any law now in force or which may hereafter be enacted, regulating the employment of minors by fixing the hours of labor."

There are now pending in the house bills empowering the governor to suspend labor laws when requested to do so by the national authorities.

The Miller bill would permit the employment of children under 14. The hours that are to be spent in a continuation school by children are reduced from eight to three, and the provision of the law to the effect that the continuation school periods shall not be held on Saturday or after 5 o'clock in the afternoon is eliminated.

The law now provides that the time spent by a child in a continuation school shall be counted as part of the working time. The Miller bill eliminates that provision. All the schooling a child would get under the Miller bill would be after a 9-hour workday had been finished.

The Miller bill also reduces from 18 to 16 years the age at which a minor can be employed in the occupations deemed hazardous.

President Judge Kunkel, of Dauphin County Court, has given an opinion in the test case of the state against the Locust Mountain Coal Co. for payment of anthracite tax under the Dawson act of 1915. The court holds the act of 1913 was declared unconstitutional and the act of two years ago presents the same defects.

A bill prohibiting the excavating, dredging and carrying away of material from the bed of any navigable stream, without obtaining a license therefor and imposing a tax has been introduced in the House by Mr. Simpson.

The license is to be obtained from the Auditor General and a tax of two per cent. upon the gross value or sales of all material taken from the streams is to be paid to the state.

There are hundreds of thousands of tons of sand and coal taken from the streams of Pennsylvania every year. It is estimated there were 90,000 tons of coal alone taken from the Susquehanna River between Rockville and the city line in 1916.

Roger J. Devers, counsel for the United Mine Workers, at a reception to the delegates of the State Federation of Labor, in the executive chamber on May 16 told Governor Brumbaugh that "cheating" is being done in the Legislature with regard to the amendments to the workmen's compensation law proposed by the labor interests.

Mr. Devers' asked the Governor to investigate this charge and "let the people know the facts." He declared that the bill containing the amendments is "being deliberately held up in committee at the behest of powerful interests opposed to increasing compensation to be paid to injured workmen."

The delegates urged upon the Executive that he permit nothing to be done that will have the effect of suspending during the war the laws governing the hours of labor and conditions under which the laborer works.

Governor Brumbaugh told the delegates that, in his opinion, all measures in the Legislature dealing with the welfare of labor should be reported out for open discussion on the floor, and made a plea for the suspension of differences between capital and labor during the war. He said it was not only the duty of every laboring man, but every employer and every citizen, to make every possible sacrifice at this time so that the fewest possible obstacles may be put in the way of a united nation at war.

Another bill in which the labor unions are interested and which was recommitted on May 10, was the Geary bill, compelling every corporation in the state, either foreign or domestic, to file annually with the Auditor General a complete list of stockholders, the amount of their shares and their addresses, and requiring the Auditor General to provide the County Commissioners of each county with a list of the persons residing in that county who hold stock in corporations, together with the name and amount of stock.

PENNSYLVANIA

Anthracite

Mt. Carmel—Fire, May 10, interrupted operations at the Greenong properties, at Marion heights, making about 1000 men idle.

Wilkes-Barre—The Delaware & Hudson Coal Co. has secured a quota of about 60 Mexicans for service at its Pine Ridge colliery, Miners' Mills. It is said that the company is planning to secure several hundred additional Mexicans to provide against labor shortage.

Lansford—Local miners, associated with the United Mine Works, are arranging plans for the establishment and operation of a co-operative store for members' benefit.

Jeanesville—The Lehigh Valley Coal Co. is planning for early operation of its coal proper-

ties and culm banks in this vicinity. Breaker facilities will be provided to handle the output.

Pittston—For the purpose of interchanging ideas relative to the shipment of coal to market, officials of the Pennsylvania Coal Co. recently visited several of the Lehigh Valley collieries in this region and this week the Lehigh Valley men returned the visit, inspecting the No. 6 colliery at Inkerman.

Sixty-five applicants took the examinations for mine foremen and assistant mine foremen's certificates in the Eighth and Ninth Anthracite Inspection districts, held at the Pittston Y. M. C. A., May 8 and 9.

The Pittston Mining Institute has completed its 11th season, during which it maintained a membership of approximately 1000 and conducted monthly sessions, at which leading mining men of the region conducted discussions and lectured on questions of interest to the institute.

Shenandoah—All the Philadelphia & Reading Coal and Iron Co.'s collieries in this district were compelled to suspend operations on May 11, for want of cars, throwing thousands of men and boys idle.

Mahanoy City—Another break was discovered in the machinery of Mahanoy Plane, which in normal times hoists 1000 cars of coal over Broad Mountain daily. The new break may take three weeks to repair. The plane has been idle for several weeks, due to the failure of the main engine shaft.

Ashley—Because the sides of the Baltimore and Red Ash shafts at No. 20 Maxwell, Lehigh & Wilkes-Barre Coal Co., colliery, have bulged to an extent that makes the hoisting of cages unsafe, and threatens to make their operation impossible, on account of loose rock, the mine has been closed. About 800 employees have been laid off for the time being.

Bituminous

Berlin—The Berlin Coal Co., in which a number of Cambria County men are interested, is sinking a new shaft near here. This ground will be extensively developed this summer, it is announced. The land lies near the Baltimore & Ohio R.R. and is ideal for mining operations.

Connellsville—Leases of small coal operators in the Connellsville region will be canceled, according to notices being sent out by the H. C. Frick Coke Co. The coke company gives a shortage of labor as the reason for the invalidating of the leases.

The shipment of coke from the Connellsville region for the week ending May 5 amounted to 418,000 tons, being an increase of 23,000 tons over the preceding week. Shipments by rail aggregated 415,802 tons, while the balance of the shipments went by river.

Brownsville—The H. C. Frick Coke Co., operating 68 plants in Fayette, Westmoreland and Allegheny Counties, recently issued an offer to give for food production free of charge the use of its land not needed for the operation of its plant, and not already cultivated. This offer is extended to the public, as well as to employees of the company. Application for use of the land may be made to the superintendents of the various plants, or to the farm superintendent in the general offices in Scottdale.

West Lebanon—Work was recently started on the new stripping operation of the Corbett interests near here. The cover varies in depth from 5 to 20 ft. and will be mined with steam shovels. This will be the first attempt at this form of operating in this county. It will be necessary to build a branch of about one and one-half miles to connect with the B. R. & P. Ry., near West Lebanon Station.

Jeneau—The new tipple of the Jeneau Coal Mining Co. has been completed and the sidings will be completed shortly and the first coal from the new territory will be shipped. It is located on the B. R. & P. Ry. Jacob Frantz is superintendent of the new operation.

Indiana—At the examinations held here Apr. 10-13, inclusive, by the examining board of the Twenty-fifth Bituminous District, the result published shows certificates granted as follows out of the 40 who took the mine foreman's examination—6 first-grade mine foremen, 8 first-grade assistant mine foremen; 7 second-grade mine foremen. Out of the 13 taking the examination for fireboss, nine were successful.

WEST VIRGINIA

Buckhannon—New mines are being opened at Adrian, and several company houses are being erected there by the Buckhannon Coal Co.

Logan—Stone, Hurst & Co. has opened a promising mine at Stollings, but is delayed in making shipments because of a lack of power. As soon as the arrangements for power are com-

pleted, it is expected that regular shipments will be made.

West Union—All coal belonging to Josiah V. Thompson, in Doddridge County, has been advertised for sale by Special Commissioners Thomas P. Jacobs and F. E. Iams. The sale will take place in front of the Doddridge County court house on June 1, and will include several thousand acres of the county's best coal.

Bluefield—The Pocahontas Consolidated Coal Co. is planning the development of 5000 acres of coal land on the Virginian R.R. It is reported that three operations will be opened, and the company will install machinery with a capacity of 2000 tons daily. A small force of men is now at work, making preparations for starting the development of the land immediately. These mines will operate in the Pocahontas No. 3 seam.

Baxter—The Monongahela Valley Traction Co. is assured of a complete and adequate car supply for the operation of the Baxter mine, which is to be, when completed, one of the largest coal plants in the world. The company is modernizing every part of the operation, and the output will be greatly augmented within the next few days.

Fairmont—One of the most important coal developments in Marion County will be that of the Bethlehem Coal Co., which has operations now at Helen's Run. This company has now two mines in operation, and the third will soon be opened. The erection of a wash house is contemplated. This is something uncommon in the coal fields of West Virginia. This wash house will be large and modern.

ALABAMA

Birmingham—The Sloss-Sheffield Steel and Iron Co. is expending a considerable sum in improvements and betterments at its coal-mining plants. A large, modern commissary building and 50 dwelling houses will be constructed at Besse Mines; 25 dwellings each at Brookside and Blossburg divisions, and 30 dwellings at Drifton. The company is making six new drift openings at Drifton, in the Walker County field, and will greatly increase the output from this field. A modern brick combination machine and repair shop and supply house will be erected at Flat Top Mines. The Sloss company is maintaining the maximum production at all its plants, consistent with labor and car supply.

KENTUCKY

Whitesburg—Due to the war with Germany and the great efforts being made by farmers for record-breaking crops the mines of this section have reported quite a shortage of labor within the past few days. Output of some of the smaller operations have been cut nearly in half as many of the single miners have enlisted for service with Uncle Sam. Some of these companies, in fact the Hazard Coal Operators Exchange, has asked Congressman Stemp and others to make an appeal to the Council of National Defense for the war department to refuse to accept miners since it is necessary to have coal and the demand is great for this product. A strong appeal is being made. It is believed the operators of this county have not been so hard hit, however.

Middlesboro—The Yellow Creek Coal Co. is undertaking to make a model mining town. All the miners' houses have been provided with electric lights and have been nicely and variously painted, while running water is in every house. The streets have been graded and street lights installed and the company proposes to establish the model camp of the state.

Frankfort—The Detroit-Kentucky Coal Co. is named defendant in a suit filed in the Federal Court here by the Bickett Coal and Coke Co. of Illinois. Among other things asked is that the defendant company be required to increase its capital from \$50,000 to \$100,000, to increase the directorate from three to five, adding Bryant G. Tighe and C. A. Bickett, and to deliver all the coal produced up to Apr. 1, 1918, to the plaintiff company.

OHIO

Columbus—While not all of the votes are in at the headquarters of the Michigan, Ohio and Indiana Coal Association on the question of postponing the annual meeting of the organization, still enough are in to show that there will be no meeting during 1917. A large majority of the members voted to do away with the meeting and apply themselves to getting out a large supply of coal to take care of the country during the stress of war. The business of the association will be transacted by correspondence and by meetings of the executive committee.

Bannock—Bannock is to have six large new coal mines, and from the present outlook it will be the largest mining town in Belmont County. Several hundred acres of coal land were recently optioned. A new mine is to be opened shortly on the Kilgore farm, a short distance west of Bannock. It is understood that a new mine is also being contemplated for the Taylor farm.

INDIANA

Brazil—The Brazil Colleries Co. is preparing to open a new coal mine, two miles west of Brazil, where this company has less than 100

acres of coal land. This mine will produce a semi-block.

ILLINOIS

Murphysboro—Considerable publicity is being given to the proposition to canalize and dredge the Big Muddy River as outlined in a recent report by the Rivers and Harbors Commission. The figures submitted show that coal can be handled on the water at a cost of 1c. for 30 miles or 300 miles for 10c. per ton and 3000 miles for \$1 per ton. It is proposed to put an 8-ft. channel in by the construction of a set of locks below here and make navigable the river as far as Plumfield in Franklin County, and also to create a back water lake for storage. In this manner not only the coal from the Murphysboro field but that from the central Franklin County field could be moved to the South, as well as to Kansas City, Omaha, Minneapolis and Chicago in light draft barges.

Belleville—The Randle mine at Freeburg which changed hands a few weeks ago for \$22,000, has been again sold to the Glendale Coal and Mining Co. for \$29,000.

Harrisburg—In a gas explosion at Grayson mine, 10 miles north of here, four men were killed recently. They were Walter Calhoun, mine examiner, Joseph B. Easton, Walter Easton and Claude Humphreys.

Shelbytown—Because William Ryan, superintendent of the Chicago-Williamsburg Coal Co.'s mine here, and Mine Manager Donnigan, inspecting the mine, stayed below several hours longer than was expected, it was concluded that they had succumbed to black damp and help was summoned from the mine rescue station near Springfield. Five minutes before the rescuers arrived the two men walked out of the escape shaft.

Mulkeytown—There is considerable activity in and around here at the present time on account of the prospective sinking of a new mine between here and Royalton and another one to the southeast of this place. This will open the only undeveloped section of the Franklin County field.

Duquoin—After negotiating for several weeks the Old Ben Mining Co. of Chicago has acquired two large mines of the Ziegler District Mining Co. at Christopher, with about 16,000 acres of coal land. It is understood that the amount involved in the transfer is about \$1,000,000. The Old Ben Mining Co. already has two mines at west Frankfort. The total tonnage of the four collieries will be 16,000 tons daily. The deal is one of the biggest in the history of southern Illinois mining.

TEXAS

Dallas—The Lignite Operators Association of Texas has been organized at Dallas, advantage being taken of the fact that practically all the lignite operators of the state were attending the rate hearing before a examiner of the Interstate Commerce Commission to form the organization. It is the purpose of the organization to meet periodically, exchange views on the methods of operation and cost of production of lignite and to bring to the attention of consumers the advantages of lignite as a fuel. J. C. McKay of Dallas was elected president and H. B. Crosby of Newby was made secretary-treasurer. The next meeting will be held in Galveston during July.

COLORADO

Denver—Leyden Coal Co., owning a large lignite mine, 15 miles west of Denver, announces that it will shut down production June 3 and devote four months to repairs and improvements. Anticipating big business next fall and winter. This 30-day notification to its miners will enable them to seek employment elsewhere.

MONTANA

Butte—The Cleveland Coal mine located near Redstone has been purchased by Oscar Barnes of Minnesota, who plans extensive development in the workings.

The scarcity of coke has become a serious problem with the smelters throughout the state and in some cases the shortage of labor where coking coal is mined appears to be almost acute.

Great Falls—The coal mines in French gulch near Belt, owned by George H. Stanton of this city, are to be opened at once, the management expecting to have 200 men employed by next fall. The mines have never been worked but the coal body has been prospected and is an excellent one and of good quality.

IDAHO

Boise—The public utilities commission has instructed the railroads entering the state to make a complete statement by months of the total tonnage of coal hauled to each and every town on their lines from May 1, 1916 to the date of the report, giving as its reason for seeking the information the purpose of having a record of the consumption of coal of the different communities. It is the intention of the commission to keep a month to month record of the tonnage moved so that it will give some idea of the supply which will be in store for the coming winter.

OREGON

Portland—A cooperative agreement with the United States bureau of mines was authorized by

the Oregon bureau of mines and geology at a recent meeting of the commission whereby the federal bureau is to spend \$1000 to arrange data collected by the Oregon bureau during the past four years with a view to and as a basis for working out coal property problems. Part of the work outlined by the bureau for the next two years is to undertake a solution, if possible, of treatment of coal briquets. The bureau will send parties into the mining districts to make complete mining engineers' reports on non-producers to see if these properties cannot be placed on a paying basis. One party will go to eastern Oregon during the summer and to southern Oregon during the winter.

Personals

James Maize recently resigned his position as superintendent of the Ralston mines of the Quemahoning Coal Co., at Ralston, Somerset County, Penn.

J. J. Arnsfield, for several years connected with the advertising department of the Fairbanks-Morse Co., Chicago, Ill., has been appointed advertising manager of this company.

John Madill has resigned as superintendent for the Savan Colliery Co., at Rochester Mills, Penn., to accept a similar position with the Junevista Coal Mining Co., near Black Lick, Penn.

W. W. Craig has been appointed sales manager of W. H. Bradford & Co., Inc., with offices in the Board of Trade Bldg., Montreal, Canada. He will have complete charge of sales in that territory.

W. G. McClellan, of Indiana, Penn., machinery inspector for the Rochester & Pittsburgh Coal and Iron Co., has resigned to accept a position with the Ironton Engine Co., at Ironton, Ohio.

J. M. Roan, commissioner of the Ohio Labor and Compensation Bureau has returned to Columbus from a months' sojourn at Vancouver Island, where he made a thorough inspection of the mines.

P. A. Grady, safety and efficiency inspector for the Collins Interests in West Virginia and Ohio, has resigned his position to become general superintendent of the Louisville Coal and Coke Co., Greenbrier Coal and Coke Co., and Kimball-Pocahontas Coal Co.

James Bowron, president of the Gulf States Steel Co., and one of the most prominent industrial men in the Birmingham District, is at his desk again after a prolonged confinement at his home with inflammatory rheumatism.

F. S. Gallus, stripping inspector for the Lehigh Coal and Navigation Co., at Lansford, Penn., has been appointed division engineer in the Greenwood Wood District. W. R. James, of Mauch Chunk, succeeds Mr. Gallus as stripping inspector.

J. E. Jones, has been made vice president and general manager of the Mill Creek Coal Co., succeeding his father, the late Thomas D. Jones. The Mill Creek Coal Co., owns collieries in the Lehigh region, which will be under the charge of the new general manager.

Charles W. Connor, superintendent of the Solley Collieries Co., in charge of operations near Welch, W. Va., has resigned his position to accept that of superintendent for the Pulaski Anthracite Coal Co., at Parrott, Va. Mr. Connor will assume the duties of his new position on June 1.

James M. Armstrong, of Pittsburgh, Penn., has been promoted from the position of assistant general manager to that of general manager of the Pittsburgh Coal Co., succeeding the late George W. Schluederberg. H. R. Miller, of Elizabeth, Penn., district manager, has been promoted to succeed Mr. Armstrong.

Barnard Moraghan, of Wilkes-Barre, has succeeded G. M. Gra as outside superintendent of the Coalbrook colliery of the Hudson Coal Co. Mr. Moraghan, was transferred from the Baltimore No. 5 colliery of the company located near Wilkes-Barre. He was in charge of the extensive improvements made at Coalbrook breaker last fall.

A. T. MacAllister, former president of the Board of Trade, of Hazleton, Penn., has called the attention of the Federal Trade Commission to the advance of \$2.25 a ton in the retail price of peat coal by the G. B. Markle Co., which now charges \$5. He also asked the commission to investigate the charge that the Lehigh Valley Coal Co. refuses to sell fuel to dealers who heretofore got their supply at the Markle breakers, but whose trade has been diverted to the Lehigh Valley because of the abnormal Markle advance. The Valley company claims that its regular trade needs all the fuel it can produce and that no new business can be accommodated.

Obituary

David Williams, president of the Oakland Mining Co., Belleville, Ill., died a few days ago.

at a hospital in that city from a strain he received a few days before while working about the mine. He was 73 years old.

Edwin G. Lane, for nearly 10 years previous to 1908 Buffalo sales agent of the Pittsburgh Coal Co., died on May 5 at the age of about 50. He was twice married, but leaves no family.

Samuel C. Webb, well-known mining engineer and patentee of several successful coal-mine devices, died at his home in Mt. Lebanon, Penn., on May 11. Mr. Webb was president of the Diamond Machine Co. and a member of the S. C. Webb Engineering Co., with offices in Pittsburgh and Wilkes-Barre. Mr. Webb is survived by his widow and three children.

R. C. Wynn, superintendent of the Warner Coal Mine Division of the Republic Iron and Steel Co., died recently from heart trouble. Mr. Wynn was 49 years of age and had been engaged in mining operations practically all his life and had been connected with the Republic company a long time, and was considered a valuable official. He is survived by his widow, two daughters, two sons, three sisters and two brothers.

Recent Coal & Coke Patents

Automatic Clutch Mechanism for Coal Jigs. G. E. Reynolds, Wyoming, Penn. 1,217,502, Feb. 27, 1917. Filed June 2, 1916. Serial No. 101,395.

Safety Stop for Mine Cars. W. D. Moon, Blockton, Ala. 1,217,620, Feb. 27, 1917. Filed Dec. 2, 1916. Serial No. 134,644.

Pull Switch for Electric Mine Signals. C. Clausen, Bisbee, Ariz. 1,217,707, Feb. 27, 1917. Filed Apr. 19, 1916. Serial No. 92,171.

Grate Bar. G. S. Carrick, Chicago, Ill. 1,218,594, Mar. 6, 1917. Filed July 6, 1915. Serial No. 38,255.

Mine Door Operating Apparatus. W. M. Hummel, Lewistown, Penn. 1,218,404, Mar. 6, 1917. Filed June 24, 1916. Serial No. 105,557.

Furnace Grate. W. J. Manhire, assignor to Combustion Specialty Co., Kansas City, Mo. 1,218,199, Mar. 6, 1917. Filed Mar. 29, 1915. Serial No. 17,700.

Mine Car Dumping Apparatus. W. A. Williams, Barton, Ohio. 1,218,029, Mar. 6, 1917. Filed Aug. 7, 1916. Serial No. 113,425.

Coal Breaking Method and Machine. F. Parder, Hazleton, Penn. 1,218,693, Mar. 13, 1917. Filed July 6, 1916. Serial No. 107,732.

Steam Boiler Economizer. D. S. Jacobus, assignor to Babcock & Wilcox Co., Bayonne, N. J. 1,219,320, Mar. 13, 1917. Filed Aug. 12, 1913. Serial No. 784,315.

Mechanical Stoker. T. A. Cooke, Philadelphia, Penn. 1,219,256, Mar. 13, 1917. Filed June 18, 1915. Serial No. 34,282.

Coal Car. J. Skandora, Racine, Wis. 1,220,018, Mar. 20, 1917. Filed July 3, 1916. Serial No. 107,389.

Crushing Machine. G. H. Fraser, Brooklyn, N. Y. 1,220,157, Mar. 20, 1917. Filed Dec. 31, 1907. Serial No. 408,773.

Smokeless Oven Furnace. J. G. Broman, Chicago, Ill. 1,220,394, Mar. 27, 1917. Filed Jan. 18, 1915. Serial No. 2785.

Mine Sheave. J. N. Derrick and M. M. Vann, Rockwood, Tenn. 1,220,963, Mar. 27, 1917. Filed Dec. 22, 1916. Serial No. 138,476.

Coal Handling Bridge. T. S. Watson, Milwaukee, Wis. 1,220,804, Mar. 27, 1917. Filed Aug. 14, 1916. Serial No. 114,736.

Grate Bar. D. Dee, assignor to Dee Mfg. Co., Pocatello, Idaho. 1,220,204, Mar. 27, 1917. Filed June 5, 1916.

Stoking Door for Furnaces. G. F. Bibb, assignor to Ruud Mfg. Co., Pittsburgh, Penn. 1,220,718, Mar. 27, 1917. Filed Sept. 8, 1915. Serial No. 49,419.

Coal Picking Apparatus. F. H. Emery, Scranton, Penn. 1,220,736, Mar. 27, 1917. Filed Feb. 17, 1915. Serial No. 8778.

Briquetting Press. O. C. Duryea, assignor to American Briquette Machine Co., Huron, S. Dak. 1,220,733, Mar. 27, 1917. Filed Dec. 5, 1916. Serial No. 135,156.

Furnace Grate. J. C. and G. L. George, Bristol, Penn. 1,220,216, Mar. 27, 1917. Filed Oct. 26, 1915. Serial No. 57,935.

Coal Receptacle. J. D. Hewitt, Paterson, N. J. 1,220,422, Mar. 27, 1917. Filed Aug. 15, 1916. Serial No. 115,005.

Industrial News

Chicago, Ill.—The Bickett Coal and Coke Co., of this city, owner of the newly organized Grove-land Coal Mining Co., has awarded a contract to the Roberts & Schaefer Co. for the designing and building of a complete new coal mining plant consisting of tipple, hoist house, and various other units, for installation at Peoria, Ill.

Punxsutawney, Penn.—The Buffalo, Rochester & Pittsburgh Ry. has completed several miles of double track from Marion Center toward Indiana, and has now started construction work of double-tracking from Cloe south toward Marion Center. This is a part of the extensive improvements being made to the Indiana Branch on account of the heavy coal traffic from the Indiana County fields.

Washington, Penn.—It is rumored here that the Chartiers Southern R.R. will be extended into South Strabane Township, Washington County, this summer. The Pittsburgh Coal Co. has purchased large coal properties in this section and the railroad will give an outlet for this coal field.

Johnstown, Penn.—John C. Cosgrave, of this city, has closed two more large coal deals in the past week. He purchased 225 acres in Black Township, Somerset County, for \$70,000 and will begin developing the property at once. The second large deal is for the operations of the R. J. Wentz Mining Co., of Johnstown, for the mines on the B. & O. R.R. in the 17th ward, Johnstown, for a consideration said to be in the neighborhood of \$75,000.

Hazard, Ky.—The Kentucky River Power Co. will construct transmission lines into the Lott's Creek section to supply the several mining corporations beginning developments in that field. The Louisville & Nashville R.R. will extend a short line branch into that section.

Trenton, N. J.—Pursuant to the recent act of the New Jersey Legislature providing for a board to formulate rules and regulations for the safe and proper construction and use of steam boilers, Governor Edge has appointed Franklin Van Winkle of Paterson, consulting engineer and Associate Editor of "Power," and Frank W. Casler of Newark, superintendent of power plants for the Public Service Corporation of New Jersey.

These gentlemen will serve jointly with the members of the Steam Engine and Boiler Operators' License Bureau and the Commissioner of Labor, the whole constituting the Board of Boiler Rules.

Untontown, Penn.—Ruling that because an individual is not able to meet his obligations is not in itself sufficient to warrant the appointment of a receiver, Justice Potter of the Supreme Court, filed an opinion on May 10, revoking the appointment of receivers for the property of Josiah V. Thompson, of Fayette County, by the Common Pleas Court of that county. The Court decides that all the proceedings were illegal and should be dismissed, with the costs placed on the plaintiffs to the suit. The property of Thompson, who is said to own coal lands valued at upwards of \$70,000,000, was placed in the hands of a receiver in January, 1915, in a suit filed by Fuller Hogsett, David L. Durr and others. It was charged that the coal lands were mortgaged to the extent of \$15,000,000; that Thompson was indebted to unsecured creditors in sums aggregating \$7,000,000 and that he was unable to meet his indebtedness as it became due.

Pittston, Penn.—Mrs. Frank Koloski, of Swoyersville, Penn., and her three children, one of whom was a posthumous child, were awarded a total of \$4150 for the death of Mr. Koloski, by a decision of George W. Beemer, referee for the Workmen's Compensation Board. Koloski was fatally burned at the Maltby colliery of the Lehigh Valley Coal Co. last November. The posthumous child was born in February. The compensation was awarded as follows: From the date of death to Aug. 16, 1922, 300 weeks, at the rate of \$6.72 per week. The children will receive compensation from that date until Oct. 23, 1929, at \$4.27 per week, when one child becomes 16 years of age. The other two orphans will receive \$3.05 per week from that time until Nov. 24, 1931, when the second child reaches the majority of compensation. The third child will be paid \$1.83 from the date the second orphan reaches majority until the latter becomes 16 years of age.

Princeton, W. Va.—The Sabine Smokeless Coal Co., a Winding Gulf operation in the Virginian coal field, capitalized at \$100,000 a few weeks ago, has been reported as being sold for \$500,000. H. E. Hines and other Princeton men are stockholders, it is said.

Huntington, W. Va.—During the month of April, the Chesapeake & Ohio R.R. is reported to have loaded 2,148,095 tons, which compares with 2,242,290 tons during March and 2,389,475 tons during April of 1916.

Willow Grove, Ohio.—The Purglave-Maher Co., of Cleveland, which operates a number of large mines in Ohio, particularly in the eastern district, is planning to open two new mines at Willow Grove. These will be known as Willow Grove Nos. 1 and 2, respectively, and will employ about 125 men each. Tipples have been constructed at both mines, and the company expects to start the No. 1 operation in a short time, to be followed by No. 2 in about one week.

Uniontown, Penn.—Announcement was recently made of the sale of the Dilliner tract of coal in Dunkard Township, Greene County, at the highest price so far paid for Greene County coal. This small tract brought \$1250 per acre.

Auburn, N. Y.—Fire of unknown origin recently destroyed two boats, the "Porter" and "Conqueror," and for a time threatened to destroy two more, together with the coal docks of the Lehigh

Valley R.R. at Fairhaven, on Lake Ontario, from which point large quantities of coal are shipped to Canada. This fire will delay coal shipment for at least a week.

Rice's Landing, Penn.—Preparations are in progress to open the Dilworth mine, near Rice's Landing, acquired some months ago by the H. C. Frick Coke Co.

Pittsburgh, Penn.—The Bertha Coal Co. recently formally opened its new offices on the 12th floor of the new Chamber of Commerce Building, Smithfield Street and Seventh Avenue. The new home of the company formerly housed in the First-Second National Bank Building, occupies about half of the 12th floor.

Frackville, Penn.—Messrs. Stein, Slattery and Gehes (the Mahan Contracting Co., Inc.), with offices in Frackville, have taken over the plant and equipment of Reiter, Curtis & Hill under contract with the East Bear Ridge Colliery Co., Scranton, Penn. This makes four stripping plants which the above company has in operation, carrying heavy contract yardages.

Punxsutawney, Penn.—Dr. Daniel Ritter, Eugene Winslow and others of this city, have organized Ritter & Winslow, Inc. Besides the extensive mining interests of their own in this vicinity, they are going to act as sales agents for other operators. The company will occupy the entire seventh floor of the Spirit Building. It will represent the Jeneau Coal Mining Co., Summit Coal Co., and others.

Indiana, Penn.—The Junevesta Coal Mining Co. is opening a large tract of coal in West Wheatfield Township, Indiana County. The new operation is located on the Pennsylvania R.R., on the Black Lick and Cresson branch. It is proposed to install a modern mining operation. John Madill, of Indiana, is superintendent in charge of the construction work.

Pittsburgh, Penn.—The Casey-Moorhead Engineering Co. has opened offices in the Bessemer Building as consulting electrical engineers, furnishing appraisals, estimates, reports, plans and specifications on electrical apparatus, applied to industrial plants and coal mines. Both Mr. Moorhead and Mr. Casey were formerly with the Westinghouse Electric and Manufacturing Co.

Madisonville, Ky.—Alarmed by the rate at which labor was being taken away from the city, the City Council has passed an ordinance fixing a license tax of \$400 a year on labor agents who come to the city and enlist workmen skilled or unskilled, for employment elsewhere.

Philadelphia, Penn.—W. H. Bradford & Co., Commercial Trust Building, are said to have acquired the Clarion mine, Huey, Penn., from the Clarion Coal Mining Co., and will operate the property.

Lansford, Penn.—The mine workers unions in the Panther Creek Valley districts are planning for the regular employment of a number of physicians to be considered as family doctors for all members in good standing.

Pittsburgh, Penn.—The Pittsburgh Coal Co. has purchased about 4469 acres of coal lands in Somerset, West Bethlehem, Amwell and South Strabane Townships, Washington County, for a consideration of \$768,000 from I. W. Seaman.

St. Louis, Mo.—Railroads operating out of St. Louis have received orders from Washington that hereafter coal cars shall not be used for the handling of any freight except coal and iron.

Sydney, N. S.—The Royal Commission appointed to investigate conditions among colliery workers at Glace Bay has effected a settlement of the wage question and also brought about an understanding between the rival labor organizations, the United Mine Workers and the Provincial Workmen's Association. An advance of 10c. per day is made to mine workers whose wages are \$2.50 per day or less, and in addition a raise of 12½c. is made all around.

Halifax, N. S.—The Nova Scotia Legislature has passed a bill enabling cities and towns to establish a fuel yard, and purchase fuel for sale to the public.

Buffalo, N. Y.—The Semet-Solvay Co., which began the building of a byproduct coke plant on the Niagara River bank below the city before the breaking out of the European War and suspended work on that account, has completed 60 ovens and began operations last week. The new steel mill of the Wickwire Steel Co., which was built to take the output of the ovens, both gas and coke, has also been put in operation.

St. Louis, Mo.—Steps toward the organization of two barge lines, with an aggregate capitalization of \$3,500,000, were taken at the River Conference held here recently. One to operate between St. Louis and New Orleans is to have a capitalization of \$2,000,000. The other, to operate between St. Louis and St. Paul, is to have a capitalization of \$1,500,000. James E. Smith, of St. Louis, who was elected president of the Mississippi Valley Waterways Association, in which all the existing organizations are to be merged, was authorized to appoint a committee to obtain subscriptions. Work for a deeper channel in the Mississippi is to be abandoned for the present and all efforts exerted toward supplying boats and barges for the present channel, as a war measure.

Seward, Alaska.—Orders have been issued to the Alaskan Engineering Commission in charge of the construction of the government railroad to rush construction work on that section of the road between Seward and the Matanuska coal fields and for the first time since the government has undertaken the work double shifts are being maintained.

Cordova, Alaska.—All materials for the construction of the remaining 17 miles of the Alaska Anthracite Railroad Co. line between here and the Bering River coal field have arrived together with a boatload of 70 workmen who will be employed by the Alaska Petroleum and Coal Co. in getting the companies properties ready for shipments as soon as the railroad is completed. The coal company has 160 acres of anthracite coal held under the first patent granted by the Department of the Interior.

Juneau, Alaska.—A patent has been issued by the Federal Government without restrictions to the fatherest north coal mine on the North American continent. The mine is located on the shore of the Arctic Ocean at a point known as Corwin Bluff, north of Point Hope. It lies 160 miles inside the Arctic Circle and is one of the earliest developed coal deposits in Alaska, the coal being used by whalers and revenue cutters years before the discovery of gold in the Klondike. The patent was issued to Charles MacIntosh.

Louisville, Ky.—An inquiry conducted by the Courier-Journal on May 11, covering 64 cities and towns in Kentucky, all of them of considerable importance and some of them railroad repair shop towns, disclosed that only 155 empty coal cars could be counted, all told, outside of Louisville, and in 54 of these towns not an empty coal car was to be found. In Louisville on that day 287 empty coal cars were counted in the yards or on tracks, although the paper stated that it was informed that all of these cars had been moved out by night or were being assembled for moving out during the night. The inquiry was made on the strength of wild statements to the effect that "strings" of empty coal cars were on sidings everywhere.

Portland, Ore.—The question of securing enough coal for the local market to meet winter consumption has reached serious proportions and many dealers have scoured the Northwest to obtain contracts for delivery. The entire output of the Beaver Hill mine near Marshfield has been contracted for by the Edlefson Fuel Co. and not only are the screenings to be used but some from the old dumps which will be employed for steam purposes.

Pottsville, Penn.—Because of the failure of clergymen to make returns of marriages performed by them, many claims for compensation under the workmen's compensation law are likely to be invalidated. Recorder Frank C. Ball, of Schuylkill County, has received instruction from state officials to proceed with suits at law against the delinquents and information is being gathered against all who fail to obey the law.

Cleveland, Ohio.—The A. J. Morgan Coal Co. has increased its capital from \$10,000 to \$50,000.

Columbus, Ohio.—The Ohio Coal Washing and By-Products Co. has increased its capital stock from \$50,000 to \$75,000.

Wellston.—The Bachrach Coal Co., capitalized at \$25,000, has been organized by F. A. Farraci, Clyde A. Patton and Frank Bachrach.

Tates Gap, Ala.—D. B. Gore & Co. of Gadsden, Ala., is opening a surface mine at Tates Gap. The output will be about 500 tons per day.

Philadelphia, Penn.—The Pine Ridge Coal Co. has been incorporated with a capital of \$75,000. Howard S. Goodwin is principal incorporator.

Connellsville, Penn.—The Georges Coal Co. has been incorporated with a capital of \$30,000, to operate in local territory. W. E. Rice is treasurer.

Philadelphia, Penn.—The Mason-Heflin Coal Co. has filed articles of incorporation in Pennsylvania with a capital of \$25,000. John T. Heflin is treasurer.

East Brady, Penn.—The Lawsonham Coal Co. has been incorporated in Pennsylvania with a capital of \$15,000, to operate locally. John Morton is treasurer.

Clarksburg, W. Va.—The J. H. Williams Coal Co. has been incorporated, with a capital stock of \$25,000, by J. H. Williams and others. The company will operate in this vicinity.

Elk Garden, W. Va.—O. D. and M. E. Harris and others, of Elk Garden, have organized the Mapleville Coal Co., capitalized at \$200,000, for the purpose of opening a coal mine in this field.

Belleair, Ohio.—The Brooks' Run Coal Co. has been incorporated with a capital stock of \$25,000 by a number of local men, including Vincenzo Gentile, L. Witt, and others, to operate a mine near here.

Tulsa, Okla.—The Santa Fe Coal Mining Co. has been organized here. The company is capitalized at \$150,000 and the incorporators are: T. B. Biles, F. E. Biles and G. L. Parris, all of Tulsa.

Hombre, Ky.—(P. O. Ulvah). The Hombre Coal Co. will build 30 new miners' houses here. The coal development will have a daily capacity

of about 500 tons with increases to be made from time to time.

St. Louis, Mo.—The Mid-State Coal and Mining Co. has been incorporated with a capital stock of \$15,000. George L. Brown, Isaac Adams, E. H. Taylor, S. Robusthale and R. J. Raymond are the incorporators.

Birmingham, Ala.—The Sloss-Sheffield Steel and Iron Co. will expend approximately \$200,000 in general betterments at its plants and new dwellings for employees to be built at Bessie and Flat Top coal mines.

Sesser, Ill.—The Modern Coal Co., composed largely of Champaign, Ill., business men is preparing to sink a shaft northeast of town. A 4,000 ton mine is contemplated with electric hoist, haulage, and equipment.

Nelsonville, Ohio.—The Wel-Eber Coal Co. has been incorporated with a capital of \$10,000 to mine and sell coal. The incorporators are: C. E. Welch, L. J. Eberle, S. B. Baker, Bess Eberle and Gertrude Welch.

Chicago, Ill.—The Secretary of State, Springfield, Ill., has issued incorporation papers to the Ridge Coal Mining Co., with a capital of \$200,000. The incorporators are: W. P. Worth, H. A. Husky, E. D. Pomeroy.

Dennison, Ohio.—The Bowling Coal and Mining Co. has been incorporated with a capital of \$30,000 to mine and sell coal. The incorporators are: H. E. Bowling, A. Roy Lanning, M. Moody, P. A. Romig and E. D. Moody.

Commerce, Okla.—The Lucky Coal Mining Co. has been organized at Commerce with a capital stock of \$4000. The incorporators are: G. W. Nesmith, Zella Nesmith, both of Commerce, and William H. Scott of McAlester.

Smithfield, Ohio.—The Baniama Coal Co. has been incorporated with a capital of \$1000 to mine and sell coal. The incorporators are: B. W. Lewis, E. J. Lewis, C. J. White, F. W. Mahan and George H. Banfield.

Cleveland, Ohio.—The Rosemary Coal Co. has been incorporated with a capital of \$500,000 to mine and sell coal. The incorporators are: C. A. Becker, R. J. Mullen, John T. Kelly, M. H. McCarthy and C. A. Williams.

New Philadelphia, Ohio.—The Andreas Coal Co. has been incorporated with a capital of \$5000 to mine and sell coal. The incorporators are: A. C. Andreas, J. U. Horger, N. C. Parr, Mrs. Pauline A. Parr and Margaret Andreas.

Ridgeway, Penn.—The Hall Kaul company is planning for extensive operations at coal properties at Trout Run and vicinity. It is planned to build a new railroad line from this section to St. Marys upon the opening of the mines.

St. Clairsville, Ohio.—The Henderson-Gable Coal Co. has been incorporated with a capital of \$350,000 to mine and sell coal. The incorporators are: C. V. Finnegan, A. Teegarden, Frank Gable, A. W. Cooley and M. E. McComb.

Dover, Del.—The Jacob Best Coal Co. has been incorporated with a capital of \$1,000,000 to operate coal and coke properties. Herbert E. Latter, C. L. Rimlinger, Wilmington, and Clement M. Egner, Elkton, Md., are local incorporators.

Logan, Ohio.—The Shafer Coal Co. has been incorporated with a capital of \$10,000 to mine and sell coal. The incorporators are: E. E. Shafer, C. D. Shafer, J. J. Rettemyer, J. A. Wile, A. C. Tipton, H. S. Rosser and Homer Warehime.

Canton, Ohio.—The Van Kirk Coal Co. has been incorporated with a capital of \$50,000 to mine and sell coal. The incorporators are: Harry G. Winterhalter, D. Orlando Van Kirk, Eby B. Van Kirk, William L. Zink and William R. Thom.

Cincinnati, Ohio.—The Red Dragon Coal Co. has been incorporated with a capital of \$25,000 to mine and sell coal. The incorporators are: Morison R. Waite, Herman A. Bayless, Thomas H. Morrow, Herbert S. Harr and John R. Schindel.

Frankfort, Ky.—The Lenox Behms Coal Co. has filed articles of incorporation in Delaware with a capital of \$50,000, to engage in coal mining work in local districts. H. M. Collins and Frank Chelm, Frankfort, are the principal incorporators.

Bromide, Okla.—The Little River Coal Mining Co. has been organized here with a capital stock of \$5,000 for the purpose of developing some leases in this section. The incorporators are: O. T. Crager, C. N. Keener and T. J. Mabry, all of Bromide.

Blocker, Okla.—The Peacock Coal Mining Co. has been organized here and charter has been filed in the office of the secretary of state at Oklahoma City. The company is capitalized at \$20,000 and the incorporators are: F. C. O'Neill, S. Woods and H. G. Laish.

Craftsville, Ky.—Leases have been closed on the Craft and Tubbs coal lands immediately below here on the Louisville & Nashville main line and the work of development will be started within the next few days. Hazard people will be back of the new operation.

Tulsa, Okla.—The Seneca Coal Co. of Tulsa has been organized and a charter filed in the office of the Secretary of State at Oklahoma City. The company is capitalized at \$500,000 and the incorporators are: Arthur L. Murphy, L. L. Barnes and H. B. Barnes, all of Tulsa.

Preston, Ky.—The Martha Leslie Coal Co. is another firm organized here within the past few days by Hiram Harris, I. T. Craft, and S. E. Allen with a capital of \$10,000. This company will undertake a development on the Chesapeake & Ohio main line during the present year.

Whitesburg, Ky.—The Cassell-West-Draper Coal Co. at Cowan near here will build 50 miners' houses at its plant. These will be constructed to begin with, while at least 30 others will be built toward the close of the year. The preliminary work is starting off on the development.

Eoco, Ky.—The J. B. Elkhorn Coal Co. has been organized here by George F. Saufley, H. S. Adkins and F. M. Denham with a capital stock of \$50,000. The new company proposes to develop a large boundary of Elkhorn coal lands on the new extension of the Baltimore & Ohio R.R.

Birmingham, Ala.—It is announced by the Tennessee Coal, Iron and Railroad Co. that facilities will be provided at its Bayview mine to increase the daily production from this operation from 1500 to 2500 tons. A large number of houses for employees are now nearing completion.

Prestonburg, Ky.—The Salt Lick Coal Co. has been organized and incorporated here by K. S. Wells, W. S. Wells and I. T. Craft with a capital of \$15,000. It will develop properties in the Beaver Creek valley. The initial work will be started within ten days. K. S. Wells will be manager over the new plant.

Hazard, Ky.—The Columbus Coal Mining Co. will build 25 more new miners' houses at its plant immediately below this city, while improvements are to be made at Douglas, the company's second plant above here on the Louisville & Nashville. It will make a large increase in the output during the year.

Birmingham, Ala.—The Rice Coal Co., Inc., has been formed with a capital stock of \$5000, incorporators being E. B. Erwin, Birmingham, president; H. M. Rice, Atlanta, secretary-treasurer; and Albert Browdy, Birmingham. The company is empowered to mine coal and manufacture coke and engage in the business of selling coal, coke, ore, and other minerals.

Charleroi, Penn.—There are several new operations along the Monongahela River in the course of construction. Harry B. Drum of California is opening a slope mine near the Dawson mine; L. M. Crowthers is opening a mine at Fredricktown and George W. Dawson of Charleroi is constructing a mine to load on river and railroad near the old Crescent mine, near California.

Prestonsburg, Ky.—The Anchor Coal Co. is another of the latest coal corporations organized here for a development in the Beaver Creek field, on the new branch of the Baltimore & Ohio. Forest B. Preston, J. M. Morrell, George Beam and others are the incorporators. J. M. Morrell will be manager of operation. The plant will be electrically equipped and modern in every particular.

Hazard, Ky.—The Kentucky River Coal Mining Co., organized here a few days ago with \$100,000 capital by A. H. Whitsett, R. C. Whitsett, W. H. Miller and others, makes the announcement that it will develop a large area of coal lands immediately surrounding Hazard on the main line of the Louisville & Nashville, to produce a large tonnage daily. The new work will be launched during May.

Whitesburg, Ky.—The Whitesburg Coal Co. has been incorporated here by W. Henry Hall, W. H. Courtney, Whitesburg and W. H. Hoover, Nicholasville, with \$60,000 capital. The new company is developing the J. C. and R. B. Day coal land tracts immediately below this city on the Louisville & Nashville R.R. The initial work was started several days ago, and the new town has been christened Whitco.

Pottsville, Penn.—The Myrtle Coal Co. has been granted a charter of incorporation, with the following directors: Andrew and George Sherman; Wilber Brotherton, Detroit, Mich.; and E. J. Taylor, Scranton. The company is planning for extensive operations in this section, and has recently awarded a contract for the erection of a new breaker on its anthracite properties. Work will also be inaugurated on culm bank lands on Sharp Mountain.

Birmingham, Ala.—The Yolande Coal and Coke Co. has completed the prospecting work incident to the location of a new mine near Yolande, Tuscaloosa County, and work has commenced on the new colliery. The Alabama Power Co. is now constructing a transmission line to the site of the new mine and will supply current for the preliminary development and the permanent operation. The new opening will be on the Black Creek seam.

Benton, Ill.—Franklin County Mining Co. has been organized with a capital of \$400,000. The incorporators, Robert R. Ward, J. M. Seymour, and R. D. Kirkpatrick, have filed application with the Secretary of State, Springfield, Ill., for incorporation papers. J. M. Seymour, formerly was president of the Middle Fork Mining Co. recently sold to the U. S. Steel Corp. This development has been in operation about 18 months and is located near Benton, Franklin County, Illinois.

Market Department

GENERAL REVIEW

Threats of action by the Government restrict speculation in anthracite and prices are slightly lower though supplies still inadequate. Bituminous scores the most spectacular price advance of the year. Opening move in Government control in the Pittsburgh district. Middle Western operators making energetic efforts to control the market.

Anthracite—The past week has been characterized by mutual assurances among retailers, jobbers, wholesalers, and operators, that coal supplies are plentiful while it is only too obvious that such is not the case. Shipments to down East points for April show a decline of 26 per cent., as compared with the same month last year, while receipts at Tidewater have been low and labor troubles and inadequate car supplies have seriously interrupted production. The only real constructive feature in the market is the statement from government sources that the exorbitant prices resulting from the wild speculation in coal will not be countenanced, this having had a tendency to lower prices. Drastic action by the government officials in this direction will certainly have a beneficial effect, but in the meantime there is nothing to be gained by attempting to conceal the fact that coal is scarce. Accusations that the big companies are putting coal into storage for the double purpose of forcing up the current market and later obtaining a still higher price are certainly not sustained by the statement of heavy shipments for last month; some coal may be going into storage, but if so, this is probably being done for some consumers or wholesalers who have already purchased it.

Bituminous—A continuation of the extraordinarily heavy consumption supplemented by car shortages and interruptions to transportation, together with an increasing scarcity of labor and incipient strikes, not to mention persistent rumors that the Government will requisition considerable tonnages, not only for its own uses but for plants working on Government orders and also for the Allies, have all combined to force prices up to maximum levels. The advances have been of a spectacular nature, and as is usually the case under these conditions, differentials as to grades and qualities have practically disappeared. Many big industrial plants are working on constantly narrowing margins, and with railroads confiscating coal, often when almost at destination, these plants are constantly facing the possibility of having to close down. The situation is certainly replete with grave possibilities, and industries working on Government orders are making energetic efforts to obtain preferred shipments.

Lake Trade—The long expected action of the Government in matters pertaining to the coal industry has finally made its appearance in the Pittsburgh district, where drastic regulations have been promulgated concerning the distribution of cars and still other moves are under consideration, contemplating the pooling of coal shipments in the Lake trade. At this writing these actions have not been sufficiently well defined to analyze their possible results, and are interesting chiefly as marking the beginning of a more or less rigid Government control. In the meantime prices have advanced further, and are varying over a wider range while it is becoming constantly more difficult to interpret the situation. The future is so uncertain that neither buyers nor sellers can proceed with any confidence; the great anxiety of the former is evident from the fact that they are opening permanent offices in some of the mining regions, in order to conduct negotiations on the ground.

Middle West—The operators are making a strenuous effort to get the market in hand, and the situation is perhaps a little steadier, though prices have in some instances advanced as much as \$1 a ton. The unusual demand from outside quarters, together with the continued cool weather and a marked tendency in all directions to stock up is making the demands on the operators very insistent. In many instances, retailers are putting in orders irrespective of price, and without any guarantee as to time of shipment. Eastern coals have practically ceased to be a factor in this market, and anthracite jobbers are advising their customers to make arrangements to burn other grades. Heavy railroad buying has been an important factor in keeping any surplus tonnage from the prompt market.

A Year Ago—New anthracite prices failed to stimulate business. Bituminous continues quiet, but with an excellent undertone. Lake trade is increasing and market steady, but rather uncertain. Urgent demand for steam sizes continues the feature of the Middle West market.

Comparative Average Coal Prices

The following table gives the range of mine prices in car lots per gross ton (except where otherwise noted) on 12 representative bituminous coals over the past several weeks and the average price of the whole group for each week:

	Year Ago	May 19	May 12	May 5	Gross Averages
Clearfields	\$1.20@1.65	\$5.75@6.50	\$5.25@6.00	\$4.75@5.50	1917
Georges Creek (Big Vein)	* 1.50@1.80	6.00@6.75	5.50@6.25	5.00@5.75	Jan. 6 5 16@5.53
Cambrias and Somersets	2.80@2.85	7.25@7.50	7.00@7.50	6.00@6.25	Jan. 13 4.74@5.11
Pocahontas and New River ¹					Jan. 20 4.54@4.98
Philadelphia					Jan. 27 4.64@5.03
W. Va. Freeport	1.90@2.00	6.50@7.00	6.00@6.50	5.25@5.50	Feb. 3 4.66@4.86
Fairmont Gas mine-run	* 1.15@1.25	6.25@6.50	5.00@5.25	4.25@4.50	Feb. 10 4.70@4.95
	1.35@1.45	6.25@6.50	4.75@5.00	4.25@4.50	Feb. 17 4.67@5.04
Pittsburgh (steam coal) ²					Feb. 24 4.95@5.29
Mine-run	1.25@1.35	4.75@5.00	4.50@4.60	3.75@4.00	Mar. 3 5.10@5.48
4-in.	1.35@1.45	4.75@5.00	4.50@4.60	3.75@4.00	Mar. 10 5.36@5.61
Slack	* 95@1.05	4.75@5.00	4.50@4.60	3.50@3.75	Mar. 17 4.80@5.19
Chicago (Williamson and Franklin Co.) ³					Mar. 24 4.64@4.94
Lump	1.35@1.45	3.25@3.75	3.25@3.50	3.00@3.25	Mar. 31 4.20@4.44
Mine-run	1.20@1.30	2.75@3.25	2.75@3.00	2.50@2.75	Apr. 7 4.07@4.36
Screenings	1.00@1.10	2.75@3.75	2.75@3.00	2.50@3.00	Apr. 14 4.01@4.35
Gross average ⁴	* \$1.42@1.56	\$5.08@5.54	\$4.64@4.98	\$4.04@4.40	Apr. 21 3.83@4.14

¹ F. o. b. Norfolk and Newport News. ² Per net ton. ³ The highest average price made last year was \$4.80@5.33 made on Nov. 25. ⁴ Price lower than the week before. ⁵ Price higher than the previous week.

BUSINESS OPINIONS

Iron Age—The Government's needs in steel are still indefinite and producers are patiently awaiting the development of its plans. Meanwhile the uncertainty hampers consumers as well as the mills, and there is a growing belief that domestic users of plates will find more rather than less difficulty in supplying their wants. The joint buying of war steel, copper and other metals by the Government and its Allies, predicted in this column two weeks ago, is now plainly indicated from Washington. The more rapid development of the shipbuilding program is looked for at the same time in the effort to increase the country's output of vessels considerably beyond the 1,000,000 tons that has been counted on for this year.

Marshall Field & Co.—Wholesale distribution of dry goods for the current week has maintained a volume equal to that of the corresponding period of a year ago. Road orders for immediate shipment have been stronger than in the past week and are ahead of those of a year ago. On the lines shown for fall delivery, road sales are much in excess of the volume for the same week last year. Merchants have been in to market in smaller numbers. Collections are normal. The market on domestic cotton goods is firm.

Bradstreet—While some sections of the country continue to send in cheerful news regarding trade, the dominant note indicates conservatism, which is not obscured either by heavy Government buying nor by the fact that industry keeps moving at an active pace, accompanied by advancing wages. Inordinately high prices for commodities restrict purchases of other lines, and as the weather over a large area has been decidedly unseasonable, retail dealers have not been able to work off stocks, consequently reorders from jobbers, speaking in a broad sense, are conspicuous by their absence. Moreover, country trade is stilled by the fact that farmers are busily engaged in planting and trying to make up for backward weather conditions. Drastic taxation plans involving higher duties, coupled with readjustments to a war basis on certain products, cause a cautious spirit.

Dun—Movements in both domestic and foreign business become more irregular as further economic changes are effected, and pressure of liquidation on securities has continued, though with comparatively little accompanying unsettlement. The tendency to proceed cautiously in entering upon new engagements is now more generally apparent, and some interests defer contemplated projects pending the removal of existing uncertainties. Commercial failures this week are 276, against 297 last week, 283 the preceding week and 335 the corresponding week last year.

Dry Goods Economist—Between-seasons conditions continue to be apparent with manufacturers and wholesale distributors. The trade in general, too, is influenced by the uncertainty surrounding the new legislation of various kinds now pending at Washington. Business men are anxious to know how soon this country is really going to get into the war and to what extent its resources of men and material are to be called on. The new methods for raising an enormous amount of additional revenue are also important factors, and not the least among these is the changes which are to be made in the tariff.

American Wool and Cotton Reporter—Buying for Government contracts of wools of medium grade was the outstanding feature of the week. Large lines of lambs have been sold in large lots. More attention has been paid to worsted wools. Top business was good, tempered somewhat by manufacturing productive capacity of combs. Wool continues very strong and active. Indications for cotton still remain bullish. The South is still encouraged to hold cotton, and there is always the possibility that exports will be increased. In Fall River there has been a demand for spot cotton, presumably brought about by the big orders from the United States Government. Many feel that 25c. cotton will be reached. The woolen goods market is not active at present, but the situation is much better and the market is strong. Until buyers realize that there is a shortage, the market is not likely to appear very active. The cotton goods market is in a very uncertain position. Buying by a great many houses, at least for gray goods, has absolutely stopped.

CONTRACT NOTES

Cleveland—Local dealers bid \$9.50 per ton on city contracts for small lots of various grades for wagon delivery. Several medium-sized contracts have also been closed for Pittsburgh No. 8 coal at prices ranging from \$3.20 to \$3.50 per net ton, f. o. b. mines.

St. Louis—In response to 54 letters sent out requesting bids on 35,000 tons of coal for the Board of Education, the Polar Wave Ice & Fuel Co., and the Boehmer Coal Co., submitted a joint bid of \$3.925 per ton for Mt. Olive lump and \$3.675 for Standard. This was the only bid received, and although it is about twice the normal price for this coal, making an aggregate increased cost of about \$75,000, these two companies make this offer only with the feeling that the schools must be taken care of.

Louisville, Ky.—No bids were received at all on the recent request of the Board of Education for quotations on the winter's supply of coal, though several of the local operators have given assurance that they will help obtain this coal when needed. A great many manufacturing and industrial concerns have voluntarily advanced prices on contracts they have with local mining companies.

Atlantic Seaboard

BOSTON

Smokeless coals very firm. Only small lots of spot coal available at any price. High volatiles also in short supply. With embargoes lifted, a better movement all-rail is expected from the Pennsylvania districts. Output still light. No improvement in anthracite.

Bituminous—Proposed purchases by the Government and the possibility of large tonnages to be requisitioned in behalf of the Allies, have caused shippers to decline to make any commitments beyond the obligations already in hand. Car supply to Tidewater is not improved and practically every agency is short for prompt dumping. The spot coal available is confined to very small scattering lots and prices are strong at \$7.25@7.50, f. o. b. vessel. Buyers who have at

last made up their minds to pay "the market" are surprised to find so little coal to be had. In some cases, boats ordered to Hampton Roads have been diverted to Baltimore because coal was not in sight.

Loading on contract is somewhat better. Steamers have been moving to this port more nearly on schedule and, of course, consumption is somewhat affected by the warmer weather. However, the mills in this section are driven with business and even with the recent great accession of water power they are just about able to keep running on the hand-to-mouth coal deliveries that are being made. It is the marvel of the trade that more is not heard about the distress of large industries, but from one source or another coal is always forthcoming to keep fires under the boilers. Occasionally a spot cargo meets with ready sale at a high price, but such transactions are done quietly, neither party seeming anxious to spread the fact.

Heavy transactions on the part of the Government are said to be impeding; \$2.95 gross ton at the mines on Pocahontas and New River has been mentioned as a "taking" price. This would mean \$4.45 f.o.b. Hampton Roads, or 40c. less than the season contract price that was attacked in the Federal courts. This basis tends to show the actual labor cost at the mines, for certainly in times like these there would be no artificial price level to the Government. It shows how serious the coal situation is when comparison is made with other seasons.

The high volatiles that were being offered for shipment to this territory are gradually disappearing. It took only a few days to absorb the surplus that offered.

On delivered prices here there haven't been enough transactions the past week to show any change in the trend of the market. Buyers who must have Pocahontas or New River and have it quick are continuing to pay the prices made a week ago. Until all-rail deliveries show marked improvement the demand inland from Tidewater rehandling plants will continue active on the basis of \$12 on cars at Providence and \$13 at Boston or Portland. A few cargoes of high-grade coal have sold at \$12 alongside, Boston.

Effective May 10, the general embargo of the Boston & Maine R.R. was lifted. Through Troy and Rotterdam it had been in effect since Apr. 20 and through Mechanicville for about 10 days. A large part of New England breathes a bit easier on this account, although at this writing the volume of shipments is very light. The situation has certainly enough possibilities in it to cause very grave apprehension.

Mills that are working on Government contracts are doing everything possible to get fuel forward on a preferred basis. Certain operators who have been heavy shippers hitherto to this market now find that so large a share of output is requisitioned by the Government that they are obliged under the labor conditions and car supply to cut off practically all their commercial obligations. Prompt coal, however, of ordinary grade is somewhat easier in tone than when a strike seemed unavoidable.

Coal is short at all Tidewater loading piers, and prices correspondingly high. So little transportation is available outside of anthracite company barges that sellers know the traffic will bear high prices. After passing through various hands coal of fair grade has sold as high as \$8.75 and \$9 when available on track for quick dumping.

Bituminous at wholesale is quoted about as follows, f.o.b. loading ports at points designated, per gross ton:

	Clearfields	Camb. and Somersets
Philadelphia	\$7.00@8.00	\$7.25@8.25
New York	7.05@8.40	7.50@8.50
F. o. b. mines	5.75@6.50	6.00@6.75
Alongside Boston (water coal)	10.75@11.25	11.00@11.50

Pocahontas and New River are now quoted at \$7.25@7.50, f.o.b. Norfolk or Newport News, Va., for spot coal, and \$12@13 at Providence and Boston for inland delivery.

Anthracite—Receipts by water in April at the Port of Boston were 132,200 tons, against 178,261 tons the same month in 1916, or 74 per cent. May bids fair to show a still smaller percentage, a refutation, at least so far as New England is concerned, of the statement that deliveries compare favorably with other years.

All the dealers are running on extremely light stocks. A good deal of the city trade is being served in $\frac{1}{2}$ -ton and $\frac{1}{4}$ -ton lots, and season orders are accepted for delivery if and when dealers have the coal, and at the price current at time of delivery.

Embargoes having been lifted there is renewed hope of supplies all-rail for Tidewater dealers. Car-supply for this territory is so eccentric, however, that there is not much real expectation of any very heavy increase in tonnage.

Several of the ports on the Maine coast are down to bare boards. The summer resorts are feeling the shortage very keenly, and there seems nothing they can do at present to help themselves.

NEW YORK

No let-up in demand for anthracite. Quotations for independent coal strong. Hard steam coal situation easier. Bituminous Tidewater supplies short and prices strong. Uncertainty and labor troubles bother operators.

Anthracite—Assurances by the operators and retail dealers that everybody will be able to get coal, have not had any material effect upon the situation, although there is less tendency to pay anything asked by speculators.

Many middlemen have very little coal to sell and no quotations are obtainable from others. Receipts at Tidewater have been low and middle houses usually carrying good sized stocks were well cleaned up. However quotations vary considerably, one retail dealer, for instance, stating that he had been offered coal alongside at 75c. below what was being quoted by other shippers for coal at the docks.

The companies are well sold up, especially on the domestic coals and most of them have orders enough to carry them well into next month.

There were persistent rumors that the independent operators are considering a plan of arranging a schedule of Tidewater and mine prices for their coals and that this price-list would be announced within the next few days.

A circular letter issued by one of the leading selling agencies informed its customers that it was apparent the government will not tolerate a repetition of the high prices charged for coal last fall and winter and that methods for an equitable distribution of tonnage to prevent speculation are being formulated.

Some wholesale dealers look for a break in the market as soon as weather conditions moderate. They claim considerable of the demand has been due to articles printed in the daily newspapers as a result of which consumers have greatly increased their orders. Retail dealers are doing their best to allay the fears of their customers and most of them are circularizing their trade. One dealer has sent a letter to his customers asking them if they would prefer to have their bins filled with coal bought at the existing market prices for individual coal or to wait until their wants can be supplied with company coal.

Reports from the mine regions are not encouraging for a heavy production. Labor is short and many workers are leaving for other employment or are enlisting for war service. Coal supply is bad and mines are frequently idle on this account.

Current quotations, per gross ton, f.o.b. Tidewater at the lower ports are as follows:

	Circular	Individual
Broken	\$5.30@5.45	
Egg	5.30@5.45	\$8.00@8.25
Stove	5.55@5.70	8.00@8.25
Chestnut	5.60@5.75	8.00@8.25
Pea	4.00@4.45	6.75@7.00
Buck	4.00@4.15	6.50@6.75
Rice	3.40@4.05	5.00@5.50
Barley	2.90@3.10	3.75@4.00
Boiler	3.00@3.15	3.00@4.00

Quotations for domestic coals at the upper ports, are generally 5c. higher on account of the difference in freight rates.

Bituminous—Stocks are scarce and the failure of the miners in Central Pennsylvania to ratify the Philadelphia agreement, followed by the threat of the mine-employees to stop work, tended to aggravate the situation. The intervention of the Federal authorities to prevent a tie-up and the understanding between operators and mine employees that there would be no suspension of mining did not change conditions materially.

Car supply is far below normal while many cars have been confiscated by the railroads, some of them just before reaching their destination. Rumors as to what might be expected from the Government in the way of taking tonnages and insisting upon its contracts being filled have been numerous.

The New York market has been overrun with buyers from all sections and there are probably many representatives of these houses in the coal regions. Nearly everyone of the larger houses has one or more representatives in the mine fields either buying coal or hurrying up shipments.

Contract coals move freely but free tonnage is scarce. Buyers are not particular regarding quality. Free coals at the piers have been quoted over a wide range of prices during the week.

Current quotations, per gross ton, f.o.b. Tidewater, for various grades are as follows:

	Port Reading	South Amboy	Mine Price
George Crk.			
Big Vein..	\$7.75@8.25	\$7.75@8.25	\$6.50@6.75
Tyson	7.50@8.00	7.50@8.00	6.25@6.50
Clearfield	7.25@8.00	7.25@8.00	6.25@6.50
South Frk.		7.50@8.00	6.25@6.50
Nanty Glo.		7.50@8.00	6.25@6.50
Som'r. Co.	7.25@7.75	7.25@7.75	6.00@6.25
Que'ho'ing	7.50@8.00	7.50@8.00	6.25@6.50
W. V. Fa'rm't			
Th'r'qua..	7.25@7.50	7.25@7.50	6.00@6.25
Mine-run...	7.25@7.50	7.25@7.50	6.00@6.25
West. Md..	7.25@7.50	7.25@7.50	6.00@6.50

PHILADELPHIA

Dealers promised better shipments of anthracite. Pier movement slow. Retailers object to tonnage statements by big companies. Car shortage serious. Premiums less. New steam prices. Bituminous advances 50c. to \$1. No coal under \$6. Rumors of Government control.

Anthracite—The current week fails to record any improvement in the situation, with practically no progress made toward filling dealers' yards or the cellars of their customers. The continued cool and unseasonable weather makes household fires necessary and the small tonnage reaching here is needed for immediate consumption, thus leaving no surplus for storage.

Local dealers are basing strong hopes on the assurances of the larger mining companies that by the end of August they will have shipped as much coal during the five months commencing Apr. 1 as they do in normal years. This will probably be true as far as the big companies are concerned, for they apparently expect big business here the entire summer. Usually the Philadelphia market takes very little company coal during July and August, when the collieries often shut down two or three days a week.

This will mean that the dealers, and most likely the public, will pay higher prices, as the circular rates will advance at least 10c. per ton until Sept. 1, but they will in all probability be able to secure as much coal from the largest operators during these five months as they usually called for in three. Of course, this is not taking into consideration any unforeseen war contingencies that may arise. It must not be understood by this, however, that because the big companies hold up their end of the business here there will be no shortage by fall, as there will be a great deficiency caused by the individual operators withdrawing so much of their coal from this market. No doubt it is wise to try to persuade the dealer not to become panicky, but he well knows how little he can depend on the smaller operator. It is, of course, admitted that in many instances the small houses were used by the dealers as a convenience and coal was often bought, especially while it was standing at the scales, at bargain prices, to save the producer from paying demurrage charges. This tonnage will be missed and it greatly reduces the opportunities of a number of retail firms from filling their bins before fall at the usual bargain rates.

It is not possible to exaggerate the trials of the trade these days nor to record the ruining of former good business relations. One of the well-known sales agents recently remarked that the hours spent at his office were becoming unbearable until he forced himself to realize that very little of the coal for which he is being tormented was actually necessary now and that the lack of it would not cause any real suffering. Since reaching this frame of mind, he can handle the situation more calmly and patiently.

The dealers here who receive coal from the Lehigh Valley region are now confronted with almost an entire elimination of shipments, as since the fifth of the present month the road has refused to allow any of its cars to go off its line to foreign roads south of Trenton, N. J. Under present conditions the 30c. higher freight rate did not seriously interfere with the dealers, but with their entire shipments shut off they are in a particularly bad plight. Even though the order is modified somewhat, as is expected in a short time, they will always face the possibility of having their coal supply shut off at any time.

The local dealers resent quite keenly statements given out to the newspapers by the officials of the larger shipping companies, pointing to the fact that shipments of coal for last April were over a million tons greater than April of last year. They do not deny the authenticity of the figures, but state that they are quite misleading and once more place the brunt of the criticism on the retail man. The dealers point out that April last year had an extremely low tonnage, due to the fact that the usual 50c. discount was not made and winter prices were in effect to the middle of the following May. As a consequence, there was very little demand for coal, as the public had stocked heavily in March, fearing a strike. As a result, the tonnage for April, 1916, was far below normal; the Philadelphia & Reading Coal and Iron Co., for instance, only produced 845,005 tons that month, when their average production in ordinary times is close to a million tons.

The recent movement of coal from the piers has been slow. This is particularly true of Pt. Richmond and Coalport, N. J., where there has been great difficulty in procuring crews. Labor disturbances and strikes have been a serious handicap at both places all week.

There has been also serious trouble in the car supply recently and the collieries are reported from time to time as being closed on this account. Last week, for instance, every colliery in the Mahanoy district was idle for an entire day from this cause. In addition the Reading company announced that they had encountered further serious trouble in making repairs to their Mahanoy plane, which will mean the continuance of the movement of coal by a roundabout route.

There has been a falling off in the fancy prices on coal to outside points. Shipments that a short time ago were bringing around \$7 for egg, stove and nut are being quoted at \$1 less. This is, however, in no way due to a decreased demand. Undoubtedly the sentiment of the Federal Trade Commission is being given serious thought and more coal is being sold by the companies mining it. This means a loss only to the commission houses or brokers, and we look for still further improvement along these lines.

Locally the individuals continue to receive better prices than the larger shippers. While in some instances the premiums are rather moderate, being only 10c. higher for prepared coal, yet others are asking as much as \$4.50 for egg, \$4.60 for stove and \$4.70 for nut, and we know of one instance where pea coal was sold in a five-car lot at \$4.50 per ton.

Of the sizes stove and pea coal are hopelessly short. Egg is not so bad, but only because the demand is not so great. Chestnut has been more freely shipped than the other family sizes, but has been quickly absorbed. In this connection, there is a rather peculiar situation in regard to stove size in several instances. Some dealers appear to be accumulating a stock of this size, which they explain by stating that it is not much used for immediate consumption at this season of the year, and as their equipment is busy on small orders this size it shows a tendency to accumulate. It is expected that with the coming of warm weather any day now the dealers will get busy on their storing of winter coal for their customers and this condition will be quickly changed.

The largest retail company here is particularly short of coal and has withdrawn advertisements from the newspapers. As their advertised prices are usually accepted as standard, there now seems to be no fixed price in that branch of the trade, although we find that about \$8 for egg, \$8.25 for stove, \$8.50 for nut and \$6.50 for pea about represents a fair average at this writing.

There has been something of a change in the steam-coal situation and one of the large companies which, for a short time in April made contracts on these sizes, has refused to take further business of this kind and is now only quoting monthly prices. For May these prices have been advanced about 30c. over those in effect for April and there seems to be some basis for belief that it is the intention to raise these prices 10c. each month until September along with the general price circular.

An interesting fact in connection with shipments of steam coals originating on the lines of the P. & R. Ry. has developed in the issuance of a through tariff to Bayonne, N. J. For years, on account of a prohibitive tariff, no shipments could be made to the extensive manufacturing plants at this point except via the C. R. R. of N. J., and efforts to have a competitive tariff failed until recently, when a through rate 10c. higher than the one via the C. R. R. of N. J. was issued. It is understood that heavy shipments are already being made by the Reading shippers.

The prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for Tide, are as follows:

Line	Tide	Line	Tide		
Broken	\$4.90	\$6.05	Puck	\$2.80	\$3.70
Egg	4.05	5.15	Rice	2.30	3.30
Stove	4.30	5.50	Boiler	2.10	3.20
Nut	4.40	5.45	Barley	1.80	2.05
Pea	3.00	3.90			

Bituminous—Prices have been moving gradually upward all week until at this time it is very difficult to get a quotation under \$6, while heavy sales are being made close to \$7. Even the low-grade coals are commanding prices almost unheard of heretofore. Some coals have jumped as much as \$1.25 during the week, being principally the average grades, while the best grades have changed about 50c., bringing the prices of all grades almost on a parity, which usually happens in an extremely high price market, especially when the consumers' demand resolves itself solely into a desire to get coal of some kind.

Most of this continued upward movement is due to the unrest in several of the mining fields, especially in central Pennsylvania, where the 20 per cent. agreement has been rejected by the miners. Due to the trouble in that district all sorts of rumors have been current that the Government has taken over various operations, but these stories have been narrowed down to a single instance where an operation some months ago had contracted to deliver its entire output to the Government at about \$3.50 and official pressure through one of the war commissions has now been brought to make the men continue at work. The wage situation here has become so serious that the Secretary of Labor, Mr. Wilson, this week called the representatives of the miners and operators to Washington for a conference. It was then arranged to call off a proposed strike of 70,000 men, although no one at the conference would divulge the nature of the agreement.

There is no doubt that many of the big local plants are running on a rather close margin and they are making frequent inquiries for additional

supplies in their endeavor to stock up. In addition, shippers are more than busy endeavoring to pacify consignees to whom shipments have been made but which the railroads have failed to deliver. The car supply continues very poor and the shippers are complaining of a very much decreased production on this account. Yet despite the shortage on local deliveries embargoes have been in effect from five to seven days on shipments via the B. & O., Western Maryland and Cumberland Valley R.R.

The prices per gross ton, f.o.b. cars at mines, are as follows:

Georges Creek Big Vein	\$6.50	@7.00
South Fork Miller Vein	6.50	@7.00
Clearfield (ordinary)	6.25	@6.75
Somerset (ordinary)	6.25	@6.75
West Va. Freeport	6.25	@6.50
Fairmont gas lump	6.25	@6.50
Fairmont gas, mine-run	6.25	@6.50
Fairmont gas, slack	6.25	@6.50
Fairmont lump, ordinary	6.00	@5.25
Fairmont mine-run	6.00	@5.25
Fairmont slack	6.00	@5.25

HAMPTON ROADS

Price of Pocahontas and New River still climbing. Dumpings lighter than last week. Shortage of labor at Newport News.

Prices are still advancing, having gained about \$1 per ton since last week. Poor movement by the railroads is still the rule and all shippers are badly in arrears with their orders. At both Newport News and Sewalls Point there are a number of vessels waiting and considerable congestion has resulted at those terminals. At Newport News there is also a shortage of labor, which prevents the full working of all the piers.

Both American and foreign vessels are subject to delays in securing crews. This situation is the worst in years, and crews are demanding and receiving unheard-of wages in addition to substantial war bonuses. The coal-laden barges "Annie H. Smith" and "Joseph F. Clinton" were lost on the coast during the past week. The former had a cargo of some 2100 tons and the latter 1000 of coal from Hampton Roads. Bunker steamers are unusually numerous and their demands are so heavy that in some cases the current market price is being charged for coal over and above their normal requirements.

High volatile coal is still moving coastwise in large quantities. The bulk of this tonnage is moved to Tidewater via the Chesapeake & Ohio Ry., and this accounts for the better dumping by the road as compared with the Norfolk & Western and Virginian. The large steamer "Plymouth," which has been engaged in the off-shore trade, has now returned to the trade between Hampton Roads and New England ports. The Norwegian bark "Hedvig," coal laden from Norfolk to Norway, has foundered off the coast.

The National Soldiers' Home is asking bids on about 10,000 tons of Pocahontas or New River for delivery over the 12 months commencing July 1.

Prices for prompt delivery for Pocahontas and New River, for shipment coastwise or foreign, are \$7.50@\$8.50 per gross ton. Bunker coal, \$8@\$9 per gross ton, plus 15c. per ton trimming. Local delivery, \$7@\$7.50 per net ton on track. Anthracite is still quoted at \$9 per net ton delivered, less 50c. per ton for cash. There is little business reported on this basis, as consumers seemingly prefer waiting for better prices.

Dumpings at the Hampton Roads piers for the past several weeks were as follows:

	Apr. 21	Apr. 28	May 5	May 12
Nor. & West	142,018	88,577	104,677	165,376
Ches. & Ohio	120,257	126,533	104,567	104,252
Virginian	99,249	116,468	89,366	95,462

Total..... 361,524 331,578 298,610 365,040

BALTIMORE

Anthracite schedule above winter rates with all kinds of coal scarce. Bituminous prices advance to record levels. Fuel on road for several weeks in some cases.

Anthracite—The hard-coal trade has established a new schedule of twenty-five cents above the old winter rates here, plus the extra wholesale prices that were put on broken and pea coal. The latter are practically out of the market here for the moment, the first both by reason of scarcity and the jump of \$1.15 over the price at which it could be secured wholesale during the early part of last winter; and the latter because of the fact that practically no deliveries are being made here. Other sizes are also very scarce.

The decision to advance prices was made when the trade here found itself unable to get any deliveries from the one big producer that had announced a spring cut and after many were forced to pay a premium over winter rates to several concerns to get even a small part of their needs filled. The new schedule to the retail trade is as follows: No. 1, white ash, \$9; No. 2, \$8.50; No. 3, \$8.75; nut, \$8.90, and pea, \$7. Sunbury, No. 2, \$8.75; No. 3, \$9; nut, \$9.15; Lykens Valley, No. 2, \$9.25; No. 3, \$9.50, and nut, \$9.50. To the above prices 25c. is added for bag deliveries. A cash deduction of 25c. a ton is allowed, where bills are paid within ten days.

Bituminous—With fuel deliveries here at times almost a void, with embargoes against all class

of freight in less than car-load lots because of the serious congestion, and with mining centers all crying loudly that their labor-supply situation grows daily more acute, prices of all kinds of soft coal keep soaring. The past week saw such a slowing down of fuel shipments here by the Pennsylvania Railroad that the better class of Pennsylvania steam coals were almost out of the spot market. Some of the large industries here are near the danger line of fuel supply, and practically any price was paid in cases for emergency coal. There is no longer much difference between grades.

Prices to the trade at the mines, f.o.b., are about as follows, when coal is to be had at all for immediate delivery: Georges Creek Tyson, \$7; Somerset, \$6.50; Quemahoning, \$6.75; Clearfield, \$6.50; Freeport, \$6; Fairmont gas, three-quarter, \$6; run-of-mine, \$5.75; slack, same, \$5.50. The movement from mines to this city on the Pennsylvania at times, consumes from two to three weeks. On the B. & O. and Western Maryland recently there has been some improvement in dispatch, the time now running generally from five to seven days.

Export and Coastwise—Export and coastwise shipments have fallen off heavily. No one is willing to bring chartered bottoms here and run the risk of not being able to get through coal to get the boats away in reasonable time. Some light shipments to South America and the West Indies were noted recently.

Ocean Shipping

OCEAN FREIGHTS

Freight conditions have altered but slightly since our last report, and although there are a number of small boats available for Cuban and near-by West Indian ports, tonnage suitable for the Windward Islands is very scarce, and these rates are firmer. Very few steamers are offering at the moment for South American ports, and a number of shippers have recently chartered sailing vessels for this business at from \$22.50 to \$23 net to Buenos Aires and also on same terms to Rio.

We would quote freight rates on coal by steamer as follows:

Europe	May 7	May 14
West Coast Italy	\$85.00@100.00	\$85.00@100.00
Marseilles	80.00@100.00	80.00@100.00
Spain(Atlantic)*	30.00@36.00	30.00@36.00
Spain(Med't)*	32.40@38.40	32.40@38.40

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."

South America

Montevideo	\$28.20 about	\$28.20 about
Buenos Aires	28.20 about	28.20 about
Rosario	30.00 about	30.00 about
Rio Janeiro	26.00@28.00	26.00@28.00
Santos	28.00@30.00	28.00@30.00
Chile(good port)	17.00@18.00	17.00@18.00

West Indies

Havana	5.75 about	5.50@5.75
Cardenas, Sagua	7.00 about	6.75 about
Cienfuegos	7.75 about	7.50 about
Port au Spain	10.50 about	11.00 about
St. Lucia	10.50 about	11.00 about
St. Thomas	8.75@9.00	8.75@9.00
Barbados	10.50 about	11.00 about
Kingston	7.00@7.25	7.00@7.25
Curacao ¹	9.50 about	9.25 about
Santiago	7.75 about	7.50 about
Guantanamo	7.75 about	7.50 about
Bermuda	6.00@7.00	6.00 about

Mexico

Vera Cruz	9.00@10.00	9.00@10.00
Tampico	9.00@10.00	9.00@10.00

* Spanish dues for account of cargo. ¹ And p.c. ² Or other good Spanish port. ³ Net. W. W. Battie & Co.'s Coal Trade Freight Report.

COASTWISE FREIGHTS

While freights from Hampton Roads to Boston remain on the same basis, \$5@5.25, it develops that smaller boats, schooners of 600 to 700 tons, have expectations of \$6@6.25 to points like Rockland, Maine, and Bath, Maine, for the same loading, 5 days to load and discharge, 8c. per ton demurrage. No charters at these rates have as yet been reported.

New York rates to Boston continue \$2.75@3, and \$2.25@2.50 to Providence, few shippers being in position to load. A few schooners have chartered to Eastern ports at \$4.

Lake Markets

PITTSBURGH

Car service rule causes confusion. Spot market still higher. Contract unquotable. Coal pooled at Lake Erie ports.

The recent action of the Lake shippers of coal and iron ore in placing before the railroad authorities at Washington the desirability of there being a full supply of cars for taking coal to the Lakes and bringing iron ore therefrom, resulted in Bulletin No. 1 being issued

by the Car Service Commission at Washington, acting under the committee of five railroad presidents. This required that the roads involved should furnish full car supplies for the Lake trade, if necessary, cutting down supplies of open top cars to other shippers to 20% of allotments.

This seemed at the moment entirely satisfactory to the coal operators, though it has proved quite otherwise in the past few days to the blast furnaces, some of which have been unable to ship half their pig iron. Now, however, it appears that car supplies for moving coal elsewhere than in the Lake trade have been cut down and are quite unsatisfactory, so that the action of the coal operators may prove a boomerang. They returned to Washington the early part of the week and held a meeting with the authorities there to perfect a plan for pooling all coal shipped in the Lake trade this season whereby shipments will be made into the common store of each grade and deliveries made correspondingly.

Car supplies opened the week at about 60%, with prospects of decreasing through the week, and spot coal market has become still stronger, with supplies limited and prospects of further advances. There is no talk at all about contracts, and even the settling of prices for the Lake season, which ought to have occurred long before this, is still for the future. All the Lake coal, it is understood, is to be pooled at Lake Erie docks, whereby if a shipper gets a certain tonnage to the Lake front, a tonnage of the same description of coal will be loaded for him though it may not be the same coal, so that buyers would get the grade of coal bought but not necessarily coal from the particular mine from which the seller shipped it.

We quote the spot market at \$4.75@5 for steam, mine-run or slack, and \$5@5.25 for gas, slack, mine-run or three-quarter, per net ton at mine, Pittsburgh district. Very little slack is being produced and there is practically no price distinction. Contract is entirely unquotable.

BUFFALO

Bituminous market more unsteady. Jobbers are disgusted or alarmed and now ask for Government regulation of prices. Anthracite scarce as ever and in great demand.

Bituminous—Every week it becomes more difficult to size up the market, as there is a range of at least a dollar in the demand made by operators. There are charges that the operator sells a few cars at the offered price but holds back most of his output, and the next day, demanding a half dollar or so advance. It was not long ago that the mine owner was glad to sell his coal at a profit of 15c. a ton, while most of the bituminous coal is now bringing from \$3 to \$4 profit. However, the situation is very trying in practically all directions. The miners want more pay constantly and transportation is about as bad as it can be.

The labor supply does not improve. One day the men are out and another day the report is that no cars were received at the mines. The situation grows worse every day and the end is not in sight.

Few contracts of bituminous coal have been made lately, due mainly to the peculiar state of the market. Jobbers cannot get the mine owners to stand back of them and they do not dare to take any chances unsupported. A leading Buffalo jobber estimates that not 25% of the ordinary contracts are in force now and he does not look to see the percentage increase right away.

Quotations are about impossible, but at least 50c. advance must be made from last week, as follows:

Youghiogheny Gas	\$6.50@7.00
Pittsburgh Steam	6.40@6.90
Ohio No. 8	6.30@6.80
Bessemer	6.20@6.70
Allegheny Valley	6.10@6.60
Cambridge Co. Smithing	7.00@7.50
Pennsylvania Smokeless	7.10@7.60
All Slack	6.00@6.50

Anthracite—The trade is in a most satisfactory condition. The clamor on the part of consumers appears to include every one of them that has not a full year's supply ready for the expected rise in price. The leading shippers say that consumers have created an artificial situation; while they do not claim to be in the best possible shape they say that they are doing their best and they advise consumers not to pay the \$2.75 a net ton premium that independent operators and their representatives are asking, as they will not need to do so. The fact is that the supply coming this way from independent mines is fully as short as any, so that the consumer is in no way protected by depending on that coal. Then there is the report that the large companies are storing coal at the mines. The reply to these charges is that certain Eastern consumers or dealers have bought quite large amounts for future delivery and having insufficient storage capacity have made an arrangement for it or a part of it to be stored near the mines.

At the same time the spectacle of long lines of teams at the city trestles, waiting for coal that does not come is not pleasant. As a rule

the supply never lasts more than about half a day and often the trestles open only three times a week. It is the opinion of most of the anthracite shipping agents that the rush for coal will last all summer; if it does the winter shortage ought not to be severe.

The coal shipments by Lake for the week show that the smaller up-Lake ports are being provided for, as the clearances cover 14 in all, as follows: 41,400 tons to Duluth and Superior, 14,000 tons to Chicago, 12,150 tons to Milwaukee, 12,100 tons to Fort William, 10,300 tons to Sheboygan, 3500 tons to Manitowoc, 3200 tons to Port Arthur, 3000 tons to Marquette, 2400 tons to Lake Linden, 1200 tons to Dollar Bay, 1200 tons to Sault, Ont., 1200 tons to Depere, 1000 tons to Sault, Mich., 800 tons to Port Huron. Total, 107,450 tons.

CLEVELAND

Market quiet. No improvement in car supplies. Lake coal shipments checked by ice in northern Lakes.

There has been a comparative lull in this market the past few days. While the car supply has not improved to any noticeable extent there has been a check in Lake coal shipments, due to boats being delayed by ice in the northern Lakes, and this tonnage, though small, has been diverted to local consumers and is responsible for the quiet market. These conditions will change just as soon as the ice is all gone and the Lake boats are able to go and come without interference.

Local retail dealers bid \$9.50 per ton on city contracts calling for small lots of various grades of coal to be delivered by wagon. Several medium-sized contracts were closed this week on Pittsburgh No. 8 coal at prices ranging from \$3.20 to \$3.50 per net ton f.o.b. mine.

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack
No. 8	\$5.75	\$5.75	\$5.75
Cambridge	5.75	5.75	5.75
Middle Dist.	5.75	5.75	5.75
Hocking	5.75	5.75	5.75
Pocahontas	7.00		

TORONTO, CAN.

Trade very active. Dealers overwhelmed with orders and much behind in deliveries. City will establish municipal coal yards to provide for emergencies.

Dealers are very busy being swamped with orders for all grades of coal from consumers desirous of providing against a possible shortage. As the demand greatly exceeds the supply there is little on hand at the yards, and deliveries are so far behind that dealers are refusing further orders.

The city has definitely decided on the establishment of municipal coal yards as a provision against a coal famine. Property Commissioner Chisholm has been appointed coal commissioner and instructed to purchase 150,000 tons for the city buildings and 200,000 tons for sale to the citizens in case of emergency. The question as to whether it will be sold to the dealers or direct to the consumers will be decided later.

Quotations for best grades per short ton are as follows: Retail anthracite, egg, stove and nut, \$9.50; grate, \$9.50; pea, \$8.50; bituminous steam, \$9; slack, \$8; domestic lump, \$9; cannel, \$10; wholesale, f.o.b. cars at destination three-quarter lump, \$8; slack, \$7.85; Pocahontas smokeless, \$8.36.

DETROIT

Insufficiency of supply of all sizes of steam and domestic coal continues strengthening prices. Ice blockades delay movement on the Lakes.

Bituminous—Coal jobbers express much surprise over the scarcity of coal at this time of the year. Usually May and June are the months when coal is most plentiful and buyers are least urgent, but this year the situation seems to have been reversed. Consumers of steam coal are eager for stock, while the jobbers are having difficulty in obtaining even enough coal to provide for the most pressing demands. Incoming shipments are small and are generally sold before they reach the city. There is almost no free coal on tracks, except occasional consignments that are not acceptable in the Detroit market.

Almost any kind of steam, lump or egg is now being quoted at \$5 at the mines. Slack and nut range from \$4.50 to \$5 and mine-run of good quality is being obtained at \$4.25 to \$4.50. With smokeless coal practically out of the market, quotations of \$6 at the mines are offered for lump and egg sizes and \$5 for mine-run.

Domestic buying for household use has continued in moderate volume through the first half of May and there has been an even more active inquiry from apartment buildings and for heating factories and industrial plants. Retail dealers are buying to meet current requirements but have been unable to get much of a reserve supply.

Anthracite—Quite a number of the retail dealers report that orders they have placed for anthracite have not been accepted for immediate shipment. Not very much anthracite is coming to Detroit, though under usual conditions the

amount probably would meet requirements. This year, however, a considerable number of consumers are already placing orders for the stock they will need next winter.

Lake Trade—So many Lake vessels have experienced long delays in getting through ice blocking the lower entrance to Lake Superior that shipments of coal over the Lake routes fall very much short of the amount moved in previous years. Coal is not coming freely to loading ports, because of the lack of adequate car supply.

COLUMBUS

With a better car supply, production is heavier and the trade easier. Prices still high and buying is brisk.

A slight reaction from the extreme high prices of last week has developed. Improvement in the car supply has increased the output and the supply is now about equal to the demand. Considerable uncertainty as to the future still exists and both producers and shippers are not going ahead with any degree of confidence.

One of the best features is the active buying on the part of retailers, who are now trying to accumulate stocks. Consumers of domestic sizes are anxious about their next winter's fuel supply and dealers' stocks are exhausted and the indications are good for an active domestic demand throughout June. Retail prices are strong and still show a wide variation of from 75c. to \$1. Pocahontas lump is selling around \$7.50 to \$8.25 while splints and White Ash are quoted at \$6.75 to \$7.25. Hocking lump is strong at \$5.75 to \$6.25. Anthracite is quoted between \$9 and \$10.

Some of the larger steam users have succeeded in laying in a surplus and are not as insistent as formerly. Railroad fuel is in good demand and many inquiries are received from the purchasing departments of railroads. Some of the lines have succeeded in buying their supply for the coming six months or more. Iron and steel plants are taking a large tonnage.

The Lake trade is now attracting a considerable tonnage from other lines. While there is still ice in the Soo, some coal has moved and many other cargoes are ready. Lake prices continue high and there is active bidding for tonnage.

The finance committees of the Columbus city council, after considering appropriations for about \$20,000 for the purchase of coal supplies, laid the ordinances on the table, announcing that they expected a slump in the price of coal. Unless there is a decrease in the price of coal, the city will be compelled to float a bond issue in order to buy fuel supplies.

Prices on short tons, f.o.b. mines, are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump	\$4.50	\$4.75	
Inch and a quarter	4.50	4.75	\$4.50
Three-quarter inch	4.25	4.75	4.25
Nut	4.25	4.50	4.25
Egg	4.25	4.50	
Mine run	4.25	4.50	4.25
Nut, pea and slack	4.25	4.25	4.25
Coarse slack	4.25	4.25	4.25

LOUISVILLE

Unprecedented prices on almost panicky demands. Industrial buyers bid against each other for spot coal. State authorities investigating "coal trust." Car and labor situations worse.

Eastern Kentucky operators asking up to \$6. f.o.b. the mines, for any grade of coal and western Kentucky operators refusing orders for mine-run at \$3.50 shows the unsettled conditions in this market. A semi-panicky demand has developed, all classes of consumers apparently seeking to stock up in expectation that greatly higher prices will rule later in the season. Buyers for Northern industrial consumers have invaded this market in scores and often open up buying offices in the producing fields and bid against each other for spot coal. Many operators are not accepting any orders. Car supply, though irregular, is described as worse than ever. Labor conditions do not improve and abnormally cold weather rules.

High prices have set the crusading element against the "coal trust" and Kentucky authorities are staging various investigations before grand juries, while the coal dealers express the opinion that the net result will be to accentuate the panicky character of the demand. Retail prices have advanced to beyond winter levels in Louisville and yet the supply is insufficient. Some of the dealers are discussing the likelihood of the government regulating the trade.

Eastern Kentucky quotations range from \$5 to \$6 for coals, and western Kentucky prices from \$3 to \$3.50, with no stable figures obtainable.

The invitation of the Board of Education of Louisville for the winter coal for the schools did not bring out a single bid and it has developed that in numerous cases industrial and other consumers, who had contracted for a year, have voluntarily advanced the prices to coal companies. Referring to the Louisville school contract, several of the coal operators are said to have given assurances that they would endeavor to help the schools out in case of extreme necessity.

CINCINNATI

Active demand and continued car troubles maintain the market, and prices trend upward. Operators are refusing contracts.

The principal factor in the local market continues to be the limited supply of cars, preventing the mines from forwarding more than half of their capacity, and in many cases much less. It is conceded that the total amount of coal being mined is in excess of that produced a year ago, on account of the larger number of mines but the heavy demand absorbs all of the coal available. The better grades of nut and slack are quoted at \$4@4.50, while Pocahontas mine-run has sold at \$5.50 per short ton f.o.b. mine. Operators are reluctant to take contracts in spite of these high prices, as they have no assurance that they will be able to take care of business later on. Industrial consumers are becoming increasingly anxious to secure contracts, in spite of the unprecedented prices prevailing.

BIRMINGHAM, ALA.

Demand strong and prices very erratic, the highest bidders taking the available supply. Shortage of equipment limiting operations at many mines three and four days per week.

Conditions in the local market the last week have been of a decidedly panicky nature and prices have stiffened sharply. The demand has increased and the supply decreased, comparatively speaking, and the buyers offering the highest price were the successful bidders for the very limited tonnage to be had.

A contract was made for approximately 75,000 tons of Pratt mine-run coal at \$2.25 per ton, mines, cars to be furnished by buyer, delivered over a period of twelve months. The price element was evidently not the deciding factor in this deal, but the assurance of a car supply to enable the operator to maintain steady operations rather than a 40 to 50 per cent. schedule. The spot demand was heavy and a sale of approximately 5000 tons of Black Creek mine-run was made at \$3.80 per net ton, mines. A deal was also closed for around 1000 tons of Cahaba washed coal at \$4 per net ton, mines. A large aggregate tonnage of the lower grades of steam coal sold from \$3.25 to \$3.50 per ton, mines, the former figure representing the minimum price during the latter half of the week.

Domestic coal is very scarce and dealers are only able to secure a few cars here and there for delivery between now and fall. Practically top-notch winter prices are now prevailing in the domestic market and the lower grades of lump are selling from \$3.25 to \$3.50 and the better grades from \$4 to \$4.50 per net ton, mines.

Despite the increase in the wages of miners they decline to work regularly, and in conjunction with a limited car supply, are contributing to the seriousness of the coal shortage.

Coke

CONNELLSVILLE

Car supplies unsatisfactory and spot market stronger, with no disposition to quote on contract.

Car supplies opened the week at about 80 per cent. for Monday, but are showing a dwindling tendency for the balance of the week, and coke is decidedly scarce, with spot prices a shade higher than a week ago, except in the case of foundry, which is unchanged.

There is renewed apprehension as to car supplies, on account of the ruling of the railroad authorities at Washington that the Lake trade must be given preference to the extent of a full car supply. Probably a distinction in favor of Connellsburg coke can also be secured, as a good case could be made out, but the representations have not been made yet, the Lake coal and coke interests having been forehanding in working up their case.

There is practically nothing being done in contract coke. A number of furnace interests would be willing to contract, and at a high figure, but the operators are indisposed to quote. The lowest they would do on second-half furnace coke would be about \$8. It is not certain what furnace men would do if a firm quotation were made at this price.

We quote: Spot furnace, \$8; contract, \$8; spot foundry, \$9.50@10.50; contract foundry, \$8.50@9.50, per net ton at ovens.

The "Courier" reports production in the Connellsburg and lower Connellsburg region in the week ended May 5 at 400,000 tons, an increase of 10,319 tons, and shipments at 418,002 tons, a decrease of 8212 tons, but the showing is misleading as the previous week's shipments had been swelled by coke held at the scales from the preceding week, the shipments showing an increase of 6000 tons over the average of the two weeks.

Buffalo—The market remains steady. Coke does not participate much in the ups and downs of the coal market, often a weak condition of certain grades being reported. The consumption remains without change, though the reports of ore movements from Lake docks indicate that they are increasing. Quotations are: 72-hr. Connellsburg, \$11.85@12.35; 48-hr. furnace \$9.85; low grades, and stock, \$8.65@8.85, all f.o.b. Buffalo.

COAL AGE

Birmingham, Ala.—Inquiries for coke were brisk in the local market this week, but sales were confined to small lots here and there, where a few cars were made available by unforeseen circumstances. Spot foundry holds at the \$15 quotation and contract from \$11.50 to \$12.50 per ton, ovens. Furnace coke continues scarce and brings around \$8 per ton, ovens. Car supply is hindering the movement considerably.

A battery of old beehive ovens at Bradford, near Trussville, are being repaired and will be placed in commission to supply coke for the Trussville Furnace, this property having been purchased by a newly organized corporation of northern capitalists, who will place same in blast in the near future. The Woodward Iron Co. is also rehabilitating some old ovens near Dolomite.

Middle Western

GENERAL REVIEW

Demand continues exceedingly strong and supply inadequate. Unprecedented cool weather reducing the retailers' stocks. Prices continue upward, and car situation serious.

The demand for domestic and steam coals continues strong and the shippers have been unable to meet the calls upon them. Retailers are making heavy purchases for storage, without any guarantee as to date of shipment or price. The continued cool weather is also having its effect, dealers asking for rush shipments to supply immediate demands of householders. This unusual demand coupled with the fact that householders are already making an effort to lay in their entire year's supply has prevented retailers from accumulating any reserves.

Cars are scarce at Indiana and Illinois mines although in some districts, such as Northern Illinois, supply has been 15 per cent. better than for the past three weeks. Prices have advanced materially, in some instances the increase being \$1 per ton above last week. This increase does not seem to have stopped the flood of orders and it is not so much a question of price as it is to secure shipments.

It is reported that Lake shipments are being rushed through to upper ports, and that several boat loads of anthracite have arrived at Milwaukee and Chicago. The shortage of anthracite is very acute at all points in the West, and shippers of this coal have notified their customers to anticipate a shortage, and to stock up on some other coal.

Very little, if any, Pocahontas is reaching the West. This is also true of Eastern Kentucky and Hocking. Shortage of cars and labor is restricting shipments and it is not expected that the West will get their usual quota of these coals.

CHICAGO

Maximum demand against minimum supply is the situation in the Chicago market. Prices continue upward with car supply showing no signs of improvement.

The Chicago coal trade is experiencing the heaviest demand in its history and shippers are in no position to supply these demands owing to shortage of both labor and railway equipment. Low temperatures are not helping the situation, and is preventing the retailers from accumulating. Steam users are making heavy purchases at unusually high price levels. One Franklin County operator received an order for 24,000 tons screenings from a Milwaukee manufacturer at price of \$3.75 per ton f.o.b. cars at mines; this is \$1 per ton above the price of ten days ago. Sized coal has not shown as great an advance, most of the older orders being filled on the basis of \$3.25 per ton on Southern Illinois, and premium prices being the exception rather than the rule. There is no doubt but what a general increase will be made at an early date, but what this will amount to is very uncertain at this time.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

Grundy, La Salle and Bureau Counties:

Lump-furnace, small egg..... \$3.00@3.35
Screenings, raw..... 2.75@3.00
Screenings, washed..... 3.00@3.50
Mine-run..... 2.75@3.25

Williamson & Franklin Cos. Saline & Harrisburg
Domestic lump..... \$3.00@3.25 \$3.00@3.50
Steam lump..... 3.00@3.25 2.75@3.00
Egg..... 3.00@3.25 3.00@3.50
Nut..... 3.00@3.25 3.00@3.50
Mine-run..... 3.00@3.25 2.50@3.25
Screenings..... 3.00@3.25 3.50@3.25

Williamson & Franklin Cos. Saline & Harrisburg
Poca. & W. Va. Smokeless
Lump..... \$3.25@3.75 \$3.25@3.75
Egg..... 3.25@3.75 3.25@3.75
No. 1 nut..... 3.25@3.75 3.25@3.75
No. 2 nut..... 3.25@3.75 3.00@3.50
No. 3 nut..... 2.75@3.25
No. 1 washed..... 3.25@3.50
No. 2 washed..... 3.25@3.50
Mine-run..... 2.75@3.25 2.75@3.00
Screenings..... 2.75@3.25 2.75@3.25

Eastern Kentucky
Penna. Smokeless
Hocking Lump \$4.50@4.75
Splint Lump \$4.50@4.75

In Indiana some of the influential operators have raised the price on the little free coal they have to offer, to \$4 per ton, and report their output sold up for the ensuing 30 days. Car shortage is still very acute in this field, and not much prospect of improvement.

While very little Hocking coal is moving to this market, shippers are maintaining prices as high as \$4.75 per ton at the mines. Pocahontas has also advanced, and the increase ranges from 75c. to \$1 higher than last week. This is true of Eastern Kentucky also, but none of this coal seems to be reaching the Chicago market.

Retailers in Chicago complain of the shortage of anthracite, and are limiting customers to one-ton deliveries. The arrival of Lake shipments will materially help the situation, and a considerable quantity via boat is expected within the next two weeks.

Franklin and Williamson counties report running time at about 60 per cent. capacity, due to car shortage. The operators in these two counties refrained from making contracts to the usual extent, and inasmuch as most of the old contracts have expired their general price return is now much higher than during the winter; for this reason some of them are very reluctant to increase prices much above present levels though it is thought that there will be some increase, perhaps 25 or 50c., or a maximum price, f.o.b. the mines of \$3.75 per ton.

If the Springfield district prices are up 25c. to 50c. per ton. Car supply is inadequate and has not averaged better than 50 per cent. the past three weeks. Very little of this coal is available at present high prices due to the great amount contracted some weeks ago for shipment to the railroads.

The mines in Fulton and Peoria counties, also in the adjacent field, Bureau, La Salle and Grundy counties report a better supply of cars than for some time. Prices are very firm, ranging from \$3.35 to \$3.50 on sized coal, and a few premium offers of 25c. above these prices.

ST. LOUIS

Market apparently a trifle easier, but conditions are still panicky. Railroad buying heavy, and cars extremely short. No smokeless or anthracite. Country demand strong.

The market is a little steadier but it is still a trifle panicky. There seems to be a movement on foot among buyers locally to steady conditions a little, but the unusual demand from the country for all grades of coal, and especially Chicago, more than offsets their efforts.

In the high grade field very little coal is offered from Williamson or Franklin County, and the maximum price obtained has been \$4, though \$3.75 seems to be about the market on spot coal for domestic sizes, and from \$3.25 and \$3.50 for mine run, while screenings is around \$3.25 and down to \$2.75. No coal is being offered at the circular price, which is \$3.25, and very few of the operators are accepting orders. Such spot coal as is obtainable now, is usually in the hands of jobbers.

The country demand from the north and south for Williamson County coal is greater than the supply could possibly be, and the consumer is being advised to buy slowly right now and give the operators time to catch up.

Domestic demand is easing up locally on high grade. In the Mt. Olive and Staunton field the same conservative action of these operators that has prevailed in the past is evident now. They are keeping their prices down to the minimum and take care of their trade in the most gratifying manner. Their mine price is \$3.25 on domestic sizes, and in the country about 50c. to 75c. higher on account of the lack of equipment to take care of that business.

To offset this, in the Standard field 2-in. lump is bringing about \$2.75, or 50c. higher than domestic sizes in the Mt. Olive field which is a better coal. The Standard operators seem to be panic-stricken on account of overselling to the railroads, and are offering such little tonnage they have free at a price far above what they expect to get, thus causing the unusual price. Even at this, the Chicago market is buying at about \$2.75 or better for the Standard domestic size that will go to that market.

Recently the railroads have bought heavily in the Standard field, and there is very little

available tonnage for the open market. About July 1 and Aug. 1 a lot of this tonnage will be available, but until that time it will be scarce and high prices can be expected, unless the Government intervenes. There is a well founded report that cities like Chicago, Pittsburgh, St. Louis and other coal centers will have a deputy coal commissioner who will regulate the distribution and perhaps the price. This would be the proper solution for the local unwarranted conditions.

During the past week something like 24 cars of anthracite came in, with about twelve cars of smokeless. Arkansas moved in heavily to the extent of some 65 cars, but there is still a shortage of smokeless coal and the Arkansas field will have to be depended upon almost exclusively this season.

The Board of Education received a joint bid by the Polar Wave Ice and Fuel Co. and the Boshmer Coal Co. for the schools. This was the only reply out of 54 letters sent out. The joint bid was \$3.92½ per ton for Mt. Olive lump and \$3.67½ for Standard. The bids cover 35,000 tons and have no provision for strikes, fires or other contingencies. This is twice the price that the Board has paid in the past, and the increased cost will be about \$75,000. It is impossible to get contracts for steam or domestic now, and only the feeling that the city had to be taken care of brought forth the one bid for the school contract.

The prevailing circular price f.o.b. mines per net ton is:

	Williamson and Franklin Co.	Mt. Olive and Staunton	Standard
6-in. lump	\$3.75	\$2.25@3.00	\$2.75@3.00
3x6-in. egg	3.75	2.25@3.00	2.75@3.00
2x3-in. nut	3.75	2.25@3.00	2.75@3.00
No. 2 nut	3.50		
No. 3 nut	3.50		
No. 4 nut	3.00		
No. 5 nut	2.75		
2-in. screen	2.75@2.85		
2-in. lump		2.00@2.50	
3-in. lump		2.50@2.75	
Steam egg	3.50	2.25@2.50	2.50@2.75
Mine run	3.25@3.50	2.25	2.25@2.50
Washed			
No. 1	3.75@4.00		
No. 2	3.75@4.00		
No. 3	3.50		
No. 4	3.25		
No. 5	2.75		

Rate on Williamson & Franklin Co. is 72½¢. Rate on other fields is 57½¢.

MILWAUKEE

Prices continue at high levels. Docks working overtime. Receipts for the season so far 200,000 tons.

Notwithstanding the fact that coal cargoes are being received daily, householders and manufacturers are still being charged the rates which prevailed at the end of the strenuous winter season. Dealers refuse to make contracts except at going rates, and insist that this must be the rule, unless they are guaranteed fixed prices at the mines. Naturally there is considerable grumbling, but there seems to be no cure for the situation.

The hoists at the coal docks are being worked nights and Sundays in order to give the quickest dispatch to vessels and by so doing make their owners more inclined to consider remaining in the trade. The total receipts thus far this season approximate something like 200,000 tons, and a number of vessels are due the coming week. Tonnage has been a little easier while the Lake Superior ice blockade is on, but when all danger of delay on that lake has been removed, vessels will be more inclined to pass up Lake Michigan business.

Northwestern Markets

BUTTE, MONT.

Markets seriously affected by car shortage and prices are higher. Strong demand for storage coal.

The demand for coal is growing daily. Railroads are short of motive power and high prices for coal may be expected for months to come. The outlook for next winter is very serious, according to special notices being received by the Butte coal dealers from some of the operating companies.

The railroads struggled last year to meet all the demands for transportation that they sacrificed their motive power and are now short of it. They have worn out engines faster than they could be replaced and have today no hope of catching up with business for at least a year. Stocks of goods in every line of business have run dangerously low and these will have to be replaced this summer, and this will interfere with the movement of coal and delay storage operations until it is too late to avoid another shortage next winter. Many other reasons are quoted in circulars being received by Montana

dealers and the prediction is that there will be a sliding scale upward from now on to record heights.

BOISE, IDAHO

Lack of cars worries Idaho consumers. Southern Idaho requiring 400,000 tons and practically out of coal. Withdrawal of railroads from commercial markets works hardship.

Southern Idaho will require 400,000 tons of coal to take care of next winter's needs and is now practically out of supplies with no prospects of relieving the situation. Heretofore, Idaho and parts of Montana have been supplied from Utah mines but the Oregon Short Line R.R. has refused to furnish cars to the Denver & Rio Grande and as a result practically all coal shipped over the latter road is going to California to relieve the shortage there due to the lack of ships which formerly supplied the coast with coal from British Columbia and Australia. Unless the car shortage is relieved soon the state will be facing the worst coal famine in its history. So grave has the situation become that the governor has taken steps to compel the railroads to offer relief. Another element in the coal shortage is the fact that the Union Pacific Ry. has withdrawn from the commercial market of Idaho and Montana and will use practically the entire output of the Rock Springs district of Wyoming for its own purposes. Heretofore it supplied many of the dealers. Car shortage has affected the independent mines to such an extent that they are only operating fifty per cent. capacity.

Offering to pay cash and to contract for 10,000 tons of coal at any reasonable price up to \$3.50 a ton, in order that western Idaho may not suffer a coal shortage, Ernest Noble, president of the Overland National Bank of Boise and Howard Stein, president of the Boise Coal Co., were refused contracts by the leading Utah coal producers recently. Although coal is selling at \$2.40 at the mines for Utah points and \$3 for points outside, the coal operators were compelled to turn down the offers. The operators declared there were no assurances that they could make deliveries because of lack of cars.

Contracts for 2050 tons of coal for the state capitol buildings were awarded recently and indicate the prices in effect for this class of business the last part of April. The Lion Coal Co. will supply 450 tons of lump coal at \$9.70 a ton delivered; H. E. Stein 800 tons screened slack coal at \$5.75; Boise Payette Lumber Co. 800 tons screened slack coal at \$5.75.

BAKER, ORE.

Another and still more acute shortage of coal than last winter is predicted. Prices advancing steadily.

Another and still more acute shortage of coal than last year is the promise of several of the large dealers who have been forced to go into the Utah market for this winter's supply. The shortage has already been felt as the situation was brought to the attention of the consumer who has made an early demand for storage coal and it is freely predicted that there will be no reductions in price during the coming summer while storage coal may be impossible to get in even small quantities within a month or two. Utah mines are shipping almost exclusively to California where higher prices are prevailing on account of extreme shortages and the general situation is far from promising.

SEATTLE, WASH.

Cost of labor will keep prices up this summer. Car supplies good so far.

The state recently let a contract to the Pacific Improvement Co. of Carbonado for furnishing during the year 2500 tons of Carbonado stoker steam coal at \$3.16 per gross ton. Prices at the mines on May 4 were: Carbonado steam stoker, \$3.25; Mendoza mine-run, \$2.88; South Prairie mine-run, \$4.85; Wellington steam coal, \$3.03; Roslyn pea coal, \$3; Roslyn mine-run, \$5; South Prairie steam, \$4.75; Renton mine-run, \$4.70.

General Statistics

ANTHRACITE SHIPMENTS

The shipments of anthracite for April as reported to the Anthracite Bureau of Information at Wilkes-Barre, amounted to 5,592,299 tons, as compared with 6,989,075 tons in March of this year and with 4,528,784 tons in April, 1916. The decrease in April as compared with the preceding month was due principally to the observance by the mine workers of non-legal holidays during the first ten days in April whereby for that period, with two Sundays deducted, not more than five full working days were made. There were five Sundays in this short month, and these with the holiday idleness reduced the total working days in the month to 22, whereas in March there were 27 full working days, the largest number possible in any one month. The shorter working time in April would account for a reduction of approximately 18 per cent., or about 1,250,000 tons from the record made in March. The

actual decrease was 1,396,776 tons, or 20 per cent. In spite of this decrease in the shipments for April the total shipments for the first four months show an increase over the corresponding period of 1916 of 1,463,740 tons, the figures for the two years being respectively 23,700,531 tons and 22,236,791 tons.

Distributed by carrier companies the shipments during April were as follows:

	April	1917	1916	4 Months
P. & R. R.				
W.	1,004,028	845,005	4,494,951	4,272,430
L. V. R.R.	988,873	797,400	4,119,278	3,814,742
C. R. R. of				
N. J.	626,501	465,095	2,565,921	2,269,114
D. L. &				
W. R.R.	893,458	561,301	3,957,169	3,324,668
D. & H.				
Co.	639,495	575,786	2,518,025	2,302,523
Penna. R.				
R.	433,314	381,505	1,838,144	2,108,590
Erie R.R.	664,609	572,843	2,777,434	2,681,251
N. Y. O.				
W. R.	145,179	150,543	639,061	664,417
L. & N. E.				
R.R.	298,220	170,306	1,131,342	799,056
	5,693,677	4,528,784	24,041,325	22,236,791
* Deduction	* 101,378			340,794
	5,592,299			23,700,531

* Deduction: Tonnage reported by both C. R. R. of N. J. and L. & N. E. R.R.

LAKE SHIPMENTS

Bituminous shipments through the United States Canal at Sault Ste Marie in April amounted to 144,818 tons and through the Canadian Canal 15,500 tons. Anthracite shipments amounted to 82,792 tons through the United States Canal and 7,500 tons through the Canadian Canal.

COAL SHIPMENTS

The following statement of carloads of bituminous coal that originated on 85 railroads and of beehive coke on 13 roads in April, 1917, is compiled from reports received by the Geological Survey, Department of the Interior, by noon, May 15, 1917:

	April, 1917	March, 1917	April, 1916
Number of working days	25	27	25
Central Penn., Md., New River and Pocahontas fields, and Virginia (11 roads)	170,548	185,628	157,255
Western Penn., Ohio, and Mich. (14 roads)	111,901	116,914	72,768
Eastern Ky. and W. Va., except New River and Pocahontas fields (11 roads)	150,684	165,085	147,630
Ala., Tenn., and Geo. (5 roads)	14,066	16,499	13,818
Ill., Ind., and West. Ky. (22 roads)	138,300	167,623	62,166
Ark., Iowa, Kan., Mo., Okla., and Tex. (12 roads)	46,782	57,820	36,585
Rocky Mountain States, N. Dak., and Wash. (10 roads)	27,556	30,274	18,760
85 roads	659,837	739,843	508,982
Carloads of beehive coke (13 roads)	53,244	54,524	49,597

COMPARATIVE FIGURES BASED ON REPORTS FOR APRIL, 1917

The decrease in these shipments of bituminous coal in April, 1917, compared with March, 1917, was 11 per cent. The shipments in April, 1917, were 30 per cent. greater than in April, 1916. The average number of cars of coal loaded per working day on the 85 roads was 23,393 in April, 1917, a decrease of 15 per cent. from March, 1917, and an increase of 15 per cent. over April, 1916. The daily average of cars loaded in March, 1917, was 27,400, and in April, 1916, 20,359. The daily average loading in April, 1917, in all the districts mentioned, except western Pennsylvania, Ohio and Michigan, was less than in March, 1917.

The shipments of beehive coke in April, 1917, showed a decrease of 2.3 per cent. compared with March, 1917, and an increase of 7.3 per cent. compared with April, 1916.

I. C. C. Decisions

No. 8624. Graves Coal and Coke Co. vs. St. Louis & San Francisco Railroad Co. Submitted Apr. 27, 1916. Decided Apr. 3, 1917.

Charges collected on two carloads of coal shipped from Du Quoin, Ill., to Cape Girardeau, Mo., and reconsigned to Gideon, Mo., found unreasonable. Reparation awarded.